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GENERAL TRANSPORT
SITUATION

IN 1921

GENERAL TRANSPORT

SITUATION

1911

LEAGUE OF NATIONS

*Conference on freedom of communications
and transit. 1st, Barcelona, 1921*

GENERAL TRANSPORT
SITUATION

IN 1921

Statements submitted by the States which took part
in the First General Conference on Communications
—— and Transit, held in March-April 1921 ——

WITH AN INTRODUCTION BY

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VOL. II

GENEVA 1922

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GERMANY.

I

RAILWAYS.

Introduction.

A comparison between transport in the German Empire before and after the war shows that the situation in Germany has developed since the war in an entirely different way from that in other countries. As a result of the cession of large areas in the west and in the east, the railway system has been reduced by 4,819 kms. By the terms of the Armistice, Germany was compelled to hand over to her enemies 5,000 locomotives, 140,000 goods wagons and 10,000 passenger carriages. As in all countries which were affected by the war, traffic has suffered from the increased use of the permanent way, buildings and materials. The whole transport system has felt the effect of the sudden introduction of the eight-hour day, the resulting increase of employees (whose capacity and willingness to work was diminished by the privations of war), and the marked increase in salaries and wages, and also in the cost of all materials. The depreciation in the value of money has had considerable influence on the financial situation; the increased expenditure could not be entirely off-set by raising the passenger and goods rates. Another consideration, which affects Germany, was the taking over of the State railways by the Imperial Government on April 1st, 1920; this necessitated a vast amount of re-organisation, which also had its effect on traffic. Complete returns regarding the State-operation of the lines are not yet available for the administrative year beginning on April 1st, 1920, so that, in most cases, the only positive data which can be used for purposes of comparison are those of the year 1919/20. In certain cases reliable data regarding the present situation and possible future developments are not yet obtainable.

It follows from all these considerations that the greatest caution should be observed in drawing conclusions regarding the development

of traffic since the war, and regarding the effect of the war upon traffic, as shown in the following figures. Only after the lapse of a certain time, when matters have settled down, and the situation has become to some extent stabilised, will it be possible to judge what effects the world-war has had upon the various forms of transport—railways, waterways, air navigation and motor transport.

RAILWAY TRACK AND ROLLING-STOCK.

(a) *Length of Track of the German State and Private Railways.*

<i>State Railways :</i>	<i>1 April 1914</i>	<i>1 April 1920</i>
Normal gauge	57,821.84 kms.	52,487.83 kms.
Narrow gauge	<u>1,074.38 kms.</u>	<u>1,029.54 kms.</u>
Total	58,896.22 kms.	53,517.37 kms.

<i>Private Railways :</i>		
Normal gauge	3,535.92 kms.	3,569.21 kms.
Narrow gauge	<u>1,143.34 kms.</u>	<u>954.43 kms.</u>
Total	4,679.26 kms.	4,523.64 kms.

The narrow-gauge railways have, as a rule, a gauge of about 1 metre or 0.750 m., and in a few cases, of 0.785 m.

The reduction of the railway system by 5,378.85 kms. is explained by the following figures:

Reduction shown in the following table	4,818.61 kms.	Increase due to new construction	1,223.44 kms.
Reduction owing to the loss of Alsace-Lorraine	<u>2,030.97 kms.</u>	Not yet handed over to Denmark on April 1	<u>247.29 kms.</u>
Minus	6,849.58 kms.	Plus	1,470.73 kms.

Details of the lengths of track handed over under the Peace Treaty are given in the following table :

Ceded to	Length of Track			Remarks.
	Main Line	Branch Line	Total	
	kilometres			
Memel District	91.22	45.67	136.89	
Czecho-Slova- kia.....		31.23	31.23	
Belgium	33.50	119.67	153.17	
Denmark	69.98	177.31	247.29	
Poland		32.25	32.25	Formerly Adm. Dist. of Breslau
	551.07	810.62	1361.69	„ Bromberg
	502.28	858.40	1360.68	„ Danzig
		13.32	13.32	„ Königsberg
		26.72	26.72	„ Kattowitz
	725.50	584.55	1310.05	„ Posen
Free City of Danzig	60.42	84.90	145.32	
Total....	2033.97	2784.64	4818.61	

(b) *Material and Repair.*

The situation as regards material before the war and at the present date will be seen from the following summary, which contains three tables, showing: total number of wagons, number in need of repair and number fit for use, in the period before the war and on October 1st, 1920.

Table 1 shows that the number of locomotives has increased by 830 since the beginning of the war, but that, on the other hand, the number of passenger carriages and luggage vans has been reduced by some 22,600 and goods by wagons 124,200. Table 3, which makes allowance for wagons in need of repair, gives a less favourable picture. According to this table, there has been a reduction in the number of wagons fit for use, as compared with the pre-war period of:

Locomotives	5,360
Passenger carriages and luggage vans	26,600
Goods wagons	176,700

SUMMARY OF THE TOTAL ROLLING-STOCK AND ROLLING-STOCK IN NEED OF REPAIR.

(a) *Total Rolling-stock.*

	Before the war	On Oct. 1, 1920
Locomotives.....	29,170	30,000
Passengers carriages and luggage vans	82,600	60,000
Goods wagons.....	671,000	546,800

(b) *Rolling-stock in need of Repair.*

	Before the war	On Oct. 1, 1920
Locomotives.....	5,125	11,315
Passenger carriages and luggage vans.....	5,000	9,000
Goods wagons.....	22,500	75,000

(c) *Number of Wagons fit for Use.*

	Before the war	On Oct. 1, 1920
Locomotives	24,045	18,685
Passenger carriages and luggage vans	77,600	51,000
Goods wagons.....	648,500	471,800

The situation outlined above will become even less favourable when the surrender of rolling stock which has still to be handed over, under the Peace Treaty, to Poland, the Free City of Danzig, Memel, Czecho-Slovakia and Belgium, has been completed.

The share of the German rolling stock which has to be allotted by Germany to the ceded territories in accordance with Article 371, paragraph 3, of the Treaty of Peace, has been fixed as follows by the Committees of experts appointed by the Entente.

To be delivered to	Loco- motives	Passenger carriages	Luggage vans	Goods wagons
Belgium (Districts of Eupen and Malmédy)	73	66	40	746
Czecho-Slovakia (Hultschiner Land) .	8	25	6	77
Memel	20	29	12	346
Poland	2,360	3,670	465	49,725
Free City of Danzig .	116	172	35	2,073
Total	2,577	3,982	548	52,967

The negotiations with regard to the formal handing over (or exchange) of wagons are still for the most part pending.

The unfavourable situation as regards rolling-stock is to be chiefly ascribed to the following causes :

The Effect of the War.

The wide extent of the theatre of war involved a very high strain on the rolling stock. The wagons were so continuously in use that there was scarcely time for the most indispensable repairs. As a result of the blockade of Germany, there was a dearth of necessary raw materials, so that substitutes of inferior quality had to be employed for boilers, ironies, metal chairs and insulators. The use of these substitutes resulted in an increase in the repairs needed. The inferior quality of the fuel which had to be used during the war—such as coal and oil—also had an injurious effect on the rolling stock. An additional difficulty was that fresh personnel, who were lacking in the necessary knowledge and experience, had to be engaged to replace the large numbers of railway employees called up for military service.

Rolling-Stock lost as a result of the War.

All the rolling stock which was handed over to the Military Administration was transferred, as occasion required, from one theatre of war to another. No records were kept of the distances covered by the locomotives and wagons. Further, owing to the precipitate character of the retreat, it was not possible to ascertain what wagons had been captured by the enemy, abandoned during the evacuation of the occupied districts in the west, east, south and south-east, or left in the territory of our Allies. The available returns show an estimated loss of :

Locomotives	1,405
Passenger carriages	4,190
Luggage vans	696
Goods wagons	66,017

Surrender of Rolling Stock in pursuance of the terms of the Armistice and of the Peace Treaty.

The surrender of rolling stock which had to be handed over in pursuance of the terms of the Armistice and the Peace Treaty had a disastrous effect on the situation as regards rolling-stock. Under the Armistice alone 5,000 locomotives and 150,000 wagons had to be handed over. Compliance with this demand, which was in itself a very large one, was rendered even more difficult by the extremely exacting conditions laid down by the Allies as regards the capacity and condition of the rolling-stock to be surrendered. The percentage of locomotives in running order surrendered was relatively very high. The high standard insisted on as regards the condition of the surrendered rolling-stock made it necessary for the great majority of such stocks to be thoroughly overhauled and repaired in our workshops. The needs of our own railway service had consequently to be neglected.

Decrease in industrial Production.

In consequence of the enormous surrender of rolling-stock, numerous orders had to be given for new material. The industries concerned were, however, unable to cope fully with these orders owing to their diminished capacity for output in comparison with peace conditions.

Reduced Output of the Workers.

The reduced output of the workers had a considerable effect on the transport situation. This reduced output is to be ascribed to the introduction of the eight-hour day, the abolition of piece-work, the engagement of large numbers of unskilled workmen, and the lack of

superintendents and foremen, whose number could not be increased in proportion to the increase in workmen. There was also a temporary reduction of efficiency owing to political unrest and frequent strikes. Productive capacity was, moreover, seriously affected by long under-feeding during and after the war.

This reduced output was especially noticeable in the workshops. In spite of considerable increase of personnel, the output became progressively smaller during 1919. As a result of drastic measures, such as the closing of workshops, the dismissal of idle men, or of supernumerary personnel and the partial re-introduction of piece work, a certain improvement was achieved. The introduction of the eight-hour day has resulted in a 21 or 31 % decrease in output.

Insufficiency and Bad Quality of Coal.

As a result of the deliveries of coal to the Entente, the coal supply of the German railways has constantly become more scanty and worse in quality.

Experience shows that in order to keep up a normal service a supply of 21 days' coal is essential. The stocks available were :

on August 1st, 1914	Supplies for 95 days.
on October 1st, 1919	» » 9.5 »
on November 20th, 1919	» » 5.4 »

Of these supplies about one-third, as a rule, consisted of coke which can scarcely be regarded as usable.

When stocks are so low, it is only possible to keep up the supply if regular services are maintained and the necessary kinds of coal are received. Neither of these conditions is, as a rule, fulfilled.

The use of inferior coal is even more injurious because of its ruinous effects upon locomotives and the consequent interruption of traffic. Moreover, the bad quality of the coal, of course, necessitates a larger consumption.

Coal consumption amounted in October 1914 to 14.4 tons, and in 1919 to 21.1 tons, for every 1,000 locomotive-kilometres. Since that time it has risen to 50 tons.

The total consumption of fuel may be summarised as follows :

Total Consumption of Fuel.

(Locomotive coal, other coal, coke, briquettes, lignite.)

1913 : 16,577,000 tons, costing 219 million marks, *i. e.*, on an average,
1 ton = 13.20 marks, without cost of freight.
1919 : 16,034,000 tons, costing 1,626,854,000 marks, *i. e.*, on an average,
1 ton = 101.45 marks, without cost of freight.

1920 : 15,882,000 tons, costing 4,041,969,000 marks, *i. e.*, on an average, 1 ton = 254.50 marks, without cost of freight.

The actual consumption of fuel in the year was certainly somewhat less than in 1913, but *relatively* — in other words, if the reduction in running of trains and in the extent of the railway system and the amount of the traffic are taken into account — there has been a considerable increase. Of the quantities of fuel consumed, about 94 % was locomotive fuel coal, (coke and briquettes); the remainder consisted of other varieties of coal including lignite. About 90 % of the locomotive fuel was used for running locomotives; the remainder for various heating purposes.

The fuel was obtained from the following districts :

About	71 %	from the Ruhr Basin.
»	21 %	» Upper Silesia.
»	3 %	» Lower Silesia.
»	3 %	» Saxony.
»	2 %	» other districts.

The present prices of the various sorts of locomotive fuel are as follows :

Coal	from the Ruhr...	247-266.50	marks at the pit-head
Briquettes	» » » ...	365.10	» » » »
Coke	» » » ...	331.20	» » » »
Coal from Upper Silesia	....	205.10	» » » »
» » Lower Silesia	....	282.20	» » » »

The Main International Lines.

1914. —
1. Paris—Berlin—Wirballen—Petrograd.
 2. Paris—Berlin—Moscow.
 3. Frankfort (Main)—Halle—Breslau—Warsaw.
 4. Berlin } — } Flushing
Hambourg } — } Hook of Holland.
 5. Flushing } — } South Germany along
Hook of Holland. } — } both banks of the Rhine.
 6. Berlin—Frankfort (Main)—Basel—Switzerland.
 7. Berlin—Munich—Rome.
 8. Breslau—Dresden—Munich—Rome.
 9. Berlin—Stuttgart—Zurich.
 10. Berlin—Vienna *via* Breslau and Dresden.
 11. Berlin—Budapest—Constantinople.
 12. Berlin } — } Christiania—Stockholm.
Hamburg } — }
 13. Berlin—Copenhagen.

1921. —
1. Berlin—Stockholm.
 2. Berlin—Copenhagen.

3. Paris }
Ostend } —Berlin—Warsaw.
London }
4. Ostend {
Amsterdam { —Frankfort (Main)—Ratisbon—Vienna.
5. Paris—Strasburg—Stuttgart—Munich—Vienna.
6. Paris—Strasburg—Stuttgart—Nuremberg—Eger—Prague
Warsaw.
7. Amsterdam—Basel—Genoa.
8. Berlin {
Hamburg { — } Amsterdam
Flushing.
9. Berlin—Dresden—Prague—Constantinople.
10. Berlin {
Rome } —Vienna (*via* Passau)
Vienna }
11. Berlin—Zurich.
12. Berlin—Teschen—Vienna.
13. Berlin—Wirballen—Kowno.

*Situation as regards Transport and Capacity of the Railways
before and after the War.*

Goods traffic showed an average annual increase of about 5 % in the last five years before the war. The increase was higher in the industrial centres. Indeed, a more or less serious lack of wagons was felt every year in the autumn, owing to the increased demand for coal and the moving of the harvest. Nevertheless, the various German railway administrations, who had at their disposal high-powered locomotives in good running order and experienced employees, were generally able to cope with the demands of traffic. On the whole, the trains ran on time ; accident statistics showed that a very high degree of safety in operation had been reached.

The railways made great efforts to get the best administrative results in the running of the lines by means of comprehensive agreements, especially in regard to the exchange of wagons. The table which follows gives the returns for the last year before the war. It also shows how the figures have changed during the months of 1920. As complete statistics for the German railways are not yet available, we have only shown the figures for the Prussian-Hessian railways and those only up to August 1920 inclusive. The Prussian-Hessian railways, in the year 1913, had a length of track of 64 %, and a volume of traffic (measured in axle-kilometres) of 75 %, of the whole German railway system. The development of traffic on the other German railways was similar to that on the Prussian railways, so that the figures given in this table provide a fairly accurate account of the transport situation for the whole German system.

Traffic Returns for the Prussian-Hessian Railways.

Month	Axle-kilo- metrage (thousands)	Train kilo- metrage (thousands)	Daily average of :		Daily average of locomotive km. in :		Reasons for marked fluctuations
			Axle kilo- metrage (thousands)	Train kilo- metrage (thousands)	Passenger traffic	Goods traffic	
Monthly average 1913.....	1,950,959	43,176	64,138	1,435	871	582	
1920. January ..	1,245,622	22,323	40,182	720	304	419	
1920. February .	1,314,407	22,785	40,943	814	355	480	Considerable increase in traffic due to the impending 100% rise in fares announced for 1.3.20.
1920. March	1,227,659	22,068	39,602	712	306	411	Strike & disturbances in the Ruhr district.
1920. April.....	1,315,334	23,044	45,844	768	333	437	
1920. May	1,324,789	25,408	42,735	820	375	444	
1920. June.	1,460,988	26,769	48,699	892	433	467	Introduction of the Summer-time-table. Increase in passenger trains.
1920. July	1,479,372	28,400	47,722	916	463	451	Decreased goods traffic owing to unfavourable economic conditions.
1920. August ...	1,466,518	27,809	47,307	897	454	446	
Decrease in Aug. 1920 compared with monthly average in 1913.	484,441	15,367	16,831	538	147	134	
Reckoned in percentage.....	24.8	35.7	26.2	37.4	48.0	23.1	

The comparison of the transport situation before and after the war shows similar results when rolling stock is considered. The number of wagons in use is a conclusive factor in ascertaining the traffic capacity of the railways, while the figures showing the deficiencies of rolling-stock constitute a fairly reliable guide for estimating traffic requirements.

Data regarding Rolling-Stock.

	Covered wagons		Ordinary open trucks		Totals of all kinds of wagon	
	available	needed	available	needed	available	needed
1913	22,494,447	171,802 <i>i.e., 0.7 % of require- ments.</i>	34,624,191	115,445 <i>i.e., 0.3 % of require- ments.</i>	659,792,806	417,612
1920	13,989,215	2,867,113 <i>i.e., 17 % of require- ments.</i>	24,057,374	8,542,715 <i>i.e., 26.2 % of require- ments.</i>	49,003,996	14,390,872

Wagons for Coal, Coke and Briquettes.

	RUHR		UPPER-SILESIA		CENTRE	
	available	needed	available	needed	available	needed
1913	9,679,188	7,653 <i>i.e., 0.07 % of require- ments.</i>	3,442,839		1,961,820	4,890
1920	5,944,815	405,024 <i>i.e., 4 % of require- ments.</i>	2,217,596	266,692 <i>i.e., 7 % of require- ments.</i>	2,094,505	617,002 <i>i.e., 22.7 % of require- ments.</i>

The main cause for the difficulties experienced in operating the railways lies — and will probably continue to do so if conditions remain as at present — in the shortage of locomotives in running order. This shortage of locomotives results in temporary stoppages of traffic and immobilises wagons and trains.

General Survey of Rates.

(a) Passenger Rates on German Railways.

	Fare per kilometre in pfennigs, without supplement				Supplement in marks on express trains.		
					1st and 2nd class		3rd cl.
	Class				Kilometres	Marks	Marks
	1st	2nd	3rd	4th			
I. 4. 14	7	4.5	3	2	I— 76	0.50	0.25
					76—150	1.00	0.50
					over 150	2.00	1.00
I. 4. 19	18	7.98	4.81	3	I— 75	2.00	1.00
					76—150	4.00	2.00
					over 150	6.00	3.00
I. 4. 21	54	23.94	14.43	9	I— 75	6.00	3.00
					76—150	12.00	6.00
					over 150	18.00	9.00
I. 6. 21	58.5	32.5	19.5	13	I— 75	8.00	4.00
					76—150	16.00	8.00
					over 150	24.00	12.00

(b) *Goods Rates on German Railways.*

Pre-war rates were frequently raised during the war.

On October 1st, 1917, a transportation tax of 7 % was imposed on all goods, with the exception of coal. Further increases were made as follows :

On April 1, 1918	15 %
On April 1, 1919	60 %
On Oct. 1, 1919	50 %
On March 1, 1920	100 %

In this table the percentage of increase relates to the tariff in force immediately before the increase. In proportion to the pre-war rates the increases would be :

	With Transportation Tax.	Without Tax.
From October 1, 1917	7 %	—
— April 1, 1918	23 %	15 %
— April 1, 1919	97 %	84 %
— October 1, 1919	195 %	176 %
— March 1, 1920	491 %	452 %

Thus on March 1st, 1920, the rates as a whole were about six times what they had been previous to the war, except when there had been a much greater increase due to the further exceptional measures stated below.

On December 1, 1920, the charges on goods traffic were completely revised.

On April 1, 1921, a general new and considerable increase in rates was introduced. It varies, for the different categories of goods, from 85 to 50 %, on an average 65 %, so that at present — *except where special regulations have raised them to a still higher figure* — railway goods rates are ten times as high as the pre-war freight charges.

The units of the old and of the new tariff are classified and compared in the following table.

2. Rates for transport of coal are subject to special regulation. Formerly, special very reduced rates were in force. These were abolished, and on October 1st, 1919, replaced by a new uniform increased tariff, which was again raised on March 1st, 1920, by 100 %, and on April 1st, 1921, by about 55 %. See comparative table on page 16.)

3. Further increases in tariffs have been occasioned by the fact that the *special* rates, which were very numerous before the war, and which, like the regular rates, had already been raised, have been abolished.

4. When the new goods rates were introduced on December 1st, 1920 (in some cases previously), provisions were made for a general increase,

Regular Tariff for transportation of Goods.
(For coal: see page 16)

Distances in Kilometres	Fast freight		Parcels	Old classification											
				Secondary categories			Main categories								
	I	II (3)	I II	A (1) | A (2) | A (2)			T			B			I II III		
				An			Bn			Cn			Dn (2)		
				A			B			C			D		
				E (4)											

Transportation charge (in pfennigs) for 100 kgs.

For all distances (1) ..	I. 4. 14	40	20	20	20	12	12	12	12	12	12	12	12	12	7
	I. 4. 19	80	40	40	40	21	24	24	24	24	24	24	24	24	14
	I. 4. 21	440	330	220	220	156	140	120	130	120	100	80	80	80	60

Price per ton (in pfennigs) according to distance.

1-100	I. 4. 14	20-22	10-11	10-11	8	6.7	5	5	3.5	3.5	4.5	3.5	2.6	2.2
	I. 4. 19	44	22	22	18	13.2	10	10	6.9	6.9	8.9	6.9	5.2	4.4
	I. 4. 21	296	222	148	115	91	69	69	36	36	53	40	24	18
101-200	I. 4. 14	20	10	10	8	6.7	5	5	3.5	3.5	4.5	3.5	2.2	2.2
	I. 4. 19	44	22	22	18	13.2	10	10	6.9	6.9	8.9	6.9	4.4	4.4
	I. 4. 21	282	212	141	111	86	66	66	32	32	51	37	21	17
201-300	I. 4. 14	18	9	9	8	6.7	5	5	3.5	3.5	4.5	3.5	2.2	2.2
	I. 4. 19	44	22	22	18	13.2	10	10	6.9	6.9	8.9	6.9	4.4	4.4
	I. 4. 21	266	200	133	107	82	64	50	29	29	49	36	12	15

301-400	1.4.14 1.4.19 1.4.21	16 40 252	8 20 189	8 20 104	6.7 13.2 78	5 10 57	5 10 48	3.5 6.9 27	6 12 65	4.5 8.9 44	3.5 6.9 34	2.2 4.4 18	2.2 and 2.4 4.4 and 2.8 14
401-500	1.4.14 1.4.19 1.4.21	14 36 236	7 18 177	8 14 100	6.7 13.2 73	5 10 52	5 10 45	3.5 6.9 24	6 12 61	4.5 8.9 40	3.5 6.9 32	2.2 4.4 16	1.4 2.8 12
501-600	1.4.14 1.4.19 1.4.21	12 32 222	6 16 167	8 12 96	6.7 13.2 72	5 10 51	5 10 43	3.5 6.9 21	6 12 61	4.5 8.9 39	3.5 6.9 31	2.2 4.4 14	1.4 2.8 10
601-700	1.4.14 1.4.19 1.4.21	12 24 206	6 12 155	8 12 93	6.7 13.2 71	5 10 49	5 10 41	3.5 6.9 20	6 12 59	4.5 8.9 38	3.5 6.9 29	2.2 4.4 18	1.4 2.8 9
701-800	1.4.14 1.4.19 1.4.21	12 24 192	6 12 144	8 12 89	6.7 13.3 71	5 10 46	5 10 38	3.5 6.9 18	6 12 59	4.5 8.9 35	3.5 6.9 27	2.2 4.4 11	1.4 2.8 8
801-900	1.4.14 1.4.19 1.4.21	12 24 176	6 12 132	— — 85	6.7 13.2 68	5 10 46	5 10 36	3.5 6.9 15	9 12 57	4.5 8.9 35	3.5 6.9 26	2.1 4.4 10	1.4 2.8 7
over 900	1.4.14 1.4.19 1.4.21	12 24 162	6 12 122	— — 81	6.7 13.2 66	5 10 43	5 10 32	3.5 6.9 14	6 12 56	4.5 8.9 33	3.5 6.9 23	2.2 4.4 9	1.4 2.8 7

(1) Before December 1st, 1920 the transportation charge up to 100 kg. was reduced as a rule by one-half.

(2) Revised figures.

(3) From April 1st, 1921, the unit of class I has been applied with a weight-surtax to 50%.

(4) The secondary category Dn also serves as secondary category for main category E.

Tariff for Coal and Coke.

	Transportation charge. Pfennigs per 100 kg.	Freight per kilometric ton in pfennigs.					
		up to 75 km.	76-350 km. (inclus.)	351-400 km. (inclus.)	401-500 km. (inclus.)	501-600 km. (inclus.)	over 600 km. (inclus.)
Up to 1.4.1918 (at most)	7	2,2	2,2	1,4	1,4	1,4	1,4
From 1.4.1918 to 1.4.1919 (at most)	8,06	2,53	2,53	1,61	1,61	1,61	1,61
From 1.4.1919 to 1.10.1919 (at most)	12,88	4,05	4,05	2,58	2,58	2,58	2,58
From 1.10.1919 to 1.3.1920	19,32	6,022	12,15	3,864	2,4	2,4	1,4
From 1.3.1920 to 1.4.1921	38,64	12,15	12,15	7,73	4,8	4,8	2,8
From 1.4.1921	68	20	20	12	5	5	1

150 a	350	175	175	140	121	87	87	65	102	80	65	45	40
b	730	305	365	306	239	172	172	129	201	158	129	89	79
c	4,810	3,608	2,405	1,925	1,500	1,117	959	638	1250	905	685	425	325
200 a	450	225	225	180	154	112	112	82	132	102	82	56	51
b	946	473	473	394	304	221	221	162	261	201	162	111	101
c	6,220	4,665	3,110	2,480	1,932	1,508	1,218	795	1,610	1,160	879	530	410
300 a	630	315	315	260	221	162	162	117	182	147	117	78	78
b	1,380	690	690	572	436	320	320	231	379	290	231	154	144
c	8,880	6,660	4,440	3,550	2,748	2,145	1,722	1,080	2,290	1,650	1,230	720	560
500 a	930	465	465	420	350	262	262	187	312	237	187	122	105
b	2,128	1,064	1,064	867	700	517	517	369	615	467	369	241	207
c	13,760	10,320	6,880	5,590	4,260	3,237	2,646	1,590	3,550	2,490	1,890	1,060	820
700 a	1,170	585	585	580	480	362	362	257	432	327	257	166	133
b	2,680	1,340	1,340	1,104	964	714	714	507	852	645	507	328	263
c	18,040	13,530	9,020	7,480	5,700	4,238	3,486	1,995	4,750	3,260	2,490	1,330	1,010
1000 a	1,530	765	765	765	690	512	512	362	612	462	362	232	175
b	3,390	1,695	1,695	1,360	1,360	1,009	1,009	714	1,206	911	714	458	345
c	23,340	17,595	11,670	10,030	7,764	5,577	4,550	2,445	6,470	4,290	3,250	1,630	1,230

¹ The 50 % weight surtax, dating from December 1, 1920, is included.

² The secondary category Dn. also serves as a secondary category for category E.

³ The new category E with special list of goods is to be compared with the former tariff for raw materials

Comparative Freight-tables for Coal.

Freight Rates for 100 Kilograms in Pfennigs or for 10 tons in Marks.

From Gelsenkirchen to	Dis- tance	On 1.4 1914	On 1.4 1921	In- crease %	From Könishütte to	Dis- tance	On 1.4 1914	On 1.4 1921	In- crease %
Bremen.....	245	56	525	837	Königsberg ..	669	100.2	965	863
Hamburg.....	345	56	713	1.173	(Prussia)				
Flensburg.....	523	87	874	904	Stettin	511	75.3	868	1.052
Siegen.....	140	26	326	1.154	Magdeburg ..	600	119.6	933	680
Wetzlar	227	36	490	1.261	Berlin	505	105.4	865	721
Berlin.....	496	104	856	723	Dresden	450	98.6	822	734
Dresden	569	115	909	690					
Hanover.....	236	59	506	758	From				
Munich.....	665	128	962	652	Dittersbach				
Nürnberg....	491	104	849	716	(Northern				
Mannheim ...	333	80	695	769	Silesia) to				
From Senftenberg to					Königsberg ..	639	97.2	952	879
					Stettin	395	59.1	784	1.227
					Magdeburg ..	412	84.5	794	840
					Berlin	340	73.9	669	846
					Dresden	217	57.5	512	801
Hamburg.....	413	73	794	988					
Stettin	240	49	516	953					
Berlin	134	32	319	897					

General financial position of the German Railway Administration.

	Actual Figures 1913 (millions of marks)	Actual Figures 1914 (millions of marks)	Estimates 1920 (millions of marks)	
REGULAR ADMINISTRATION				RECEIPTS
REVENUE				With reference to 2a and b :
1. Imperial Ministry of Transport	—	—	0,237	The increase in receipts is to be attributed to the increase in passenger and goods rates.
2. Operation :				
a) Passenger traffic...	965,335	2,111,400	3,935,000	
b) Goods traffic	2,141,375	4,843,176	18,699,000	
c) Miscellaneous	243,984	612,301	327,222	With reference to 2 c :
Total operation	3,350,694	7,566,877	14,961,222	The increase in receipts is due to the larger re- turns from " Miscellane- ous receipts."
3. Miscellaneous receipts	—	—	2,100	
TOTAL REVENUE			14,973,559	
EXPENDITURE				EXPENDITURE
1. Imperial Ministry of Transport	—	—	24,798	With reference to 2a :
2. Operation :				Expenditure on per- sonnel has risen owing to the increase in numbers, due to the introduction of the 8 hour-day, and owing to the rise in sala- ries and wages.
a) Expenditure on per- sonnel	1,431,428	7,550,744	13,714,145	
b) Expenditure on ma- terial	916,749	3,952,724	13,104,049	
Total operation	2,348,077	11,503,468	26,818,194	

	Actual Figures 1913 (millions of marks)	Actual Figures 1914 (millions of marks)	Estimates 1920 (millions of marks)	
Brought forward....	2,348,077	11,503,468	26,818,195	
3. Miscellaneous Expenditure.....	—	—	1,050	With reference to 2b :
4. Debt Service (Administration, Amortisation and Interest).	—	—	2,519,000	The increased expenditure on material is explained by the excessive use made of material to compensate for that lost as a result of the war, and by the rise in prices.
TOTAL EXPENDITURE..	—	—	29,363,042	
Deficit on Operation	1,002,617	3,936,591	11,856,972	
Total Deficit (Imperial Subsidy).....			14,399,483	
EXTRAORDINARY BUDGET				With reference to 4 :
REVENUE	—	—	2,700	Under Art. 92 of the Imperial Constitution, the service of the German Administration debt is not included in the budget of the Administration.
Expenditure (on construction).....	—	—	1,986,176	
Supplementary Expenditure (Imperial Subsidy)	—	—	1,983,476	

The figures for the years 1913 and 1919 show only operation receipts and expenditure. Those for 1920 and 1921 include miscellaneous revenue and expenditure (expenses of the Ministry, debt services, construction). The latter figures are not available for the years 1913 and 1919.

Deficit on Operation. — Owing to the causes stated above, the profit on operation for the year 1913 was replaced by a deficit on operation in the succeeding years, the increase in expenditure being far greater than the increase in receipts.

The large items of expenditure in the extraordinary budget are for the repair and increase of rolling-stock.

II.

NAVIGATION ON INLAND WATERWAYS.

Goods and Shipping Traffic on German Waterways.

The statistics for traffic on German waterways during 1913, 1918 and 1920 clearly demonstrate the effects of the war.

The total traffic of the more important ports for 1913 was about 123½ million tons, as compared with only about 59 million tons in 1918. How far this reduction to less than one-half of the former traffic has been remedied in 1920 it is unfortunately impossible to estimate with accuracy, because statistics are not yet available for 1920. Some isolated returns for the most important ports demonstrate, however, the great burden under which Germany's economic system is labouring; they show that in many cases the volume of traffic is still much less than one-half of the peace-time figure.

The returns from the seaports show in a particularly striking way the decrease in imports and exports.

At Hamburg the figures have fallen from 12.6 to 3.7 million tons; at Emden from 2.9 to 1.3; at Stettin from 4.2 to 1.9. In the case of the last-named port, the figures are explained by the change in the political situation on the eastern frontier of Germany, just as the cessation of trade with the interior of Russia has had a most marked effect at Königsberg, where traffic has fallen from 1.1 million tons to 0.1 million, or to one-eleventh of its former volume.

A similar falling off—which is connected with the import and export trade through Rotterdam—has taken place in the Rhine traffic; this is shown by the figures for traffic crossing the frontier at Emmerich: 11.9 million tons as against 37.5 millions for 1913. The somewhat more favourable figures for Mannheim and more especially for Rheinau and Ludwigshafen are due to the fact that, since the supply of Saar coal has been cut off for South Germany, the coal traffic from the Ruhr to the upper Rhine has assumed larger dimensions.

*Summary of Goods and Shipping Traffic upon German waterways,
taken from the figures for the 129 largest ports in the years 1913, 1918 and 1920.*

1913

Total goods traffic. Tons.	Divided into		Total Number of incoming & outgoing boats.	Main classes of goods Carried
	Incoming. Tons.	Outgoing. Tons.		
123,585,299	68,029,648 (55 %)	55,555,651 (45 %)	1,019,038	Fuel (coal, briquet- tes, lignite, peat).
	These figures are divided as follows.			
	a) Eastern waterways.			Earth of all kinds.
3,088,055	2,300,100	787,955		
	b) The Oder Basin.			Raw and cut stone.
10,861,946	4,179,755	6,682,191		
	c) Waterways of Brandenburg.			Lime and cement.
9,709,070	8,026,766	1,682,304		
	d) The Elbe Basin.			Ore, iron and steel, wood of all kinds.
19,678,961	9,105,169	10,573,792		
	e) The Weser Basin.			Cereals, sugar of all kinds.
1,407,302	866,821	540,481		
	f) The Ems.			Manure of all kinds.
6,439,099	3,201,132	3,237,697		
	g) Lake Constance.			Various other pro- ducts.
171,538	124,354	47,184		
	h) Upper Rhine.			
19,146,251	15,483,343	3,662,908		
	i) Middle Rhine.			
3,617,274	1,971,102	1,646,172		
	k) Lower Rhine.			
38,203,729	18,717,486	24,722,471		

*Summary of Goods and Shipping Traffic upon German waterways,
taken from the figures for the 129 largest ports in the years 1913, 1918 and 1920*

1913 (suite)

Total goods traffic. Tons.	Divided Into Incoming. Tons.	Outgoing. Tons.	Total Number of incoming & outgoing boats.	Main classes of goods Carried
	l) Necker :			
397,115	112,975	384,140		
	m) Main :			
3,823,019	2,900,929	922,090		
	n) Moselle and Saar :			
322,057	188,804	138,253		
	o) Danube Basin :			
303,278	136,491	166,787		
	Ceded territory :			
	p) The canals of Alsace :			
1,180,427	719,471	460,956		

The upstream traffic amounted to about 60 %.

The downstream traffic to about 40 %.

1918.

Total goods traffic: 58,973,218 tons.

This total is divided as follows:

Coal, including briquettes	24,395,198 tons.
Lignite	3,523,670 »
Coke	7,390,871 »
Iron	324,518 »
Ore	7,247,974 »
Building material	3,334,089 »
Cereals	449,417 »
Wood	2,899,226 »
Fats and oils	10,532 »
Other goods	9,399,723 »

No other reliable figures are available.

For 1920 only the returns from the ports mentioned below are available; the corresponding figures for 1913 are given for comparison:

1920.

Total Goods Traffic		Incoming		Outgoing		Main classes of goods carried
1920 Tons	1913 Tons	1920 Tons	1913 Tons	1920 Tons	1913 Tons	
550,146	802,052	368,736	578,348	188,410	223,704	Coal, building material, ore.
3,666,698	12,632,618	1,701,081	5,382,084	1,965,617	7,250,534	Wood, earth, stone.
413,959	799,063	331,004	448,409	82,955	350,654	Fate, oils, cereals.
1,924,773	4,248,634	886,161	1,834,214	1,039,612	2,406,420	Foodstuffs.
1,262,135	2,867,706	691,384	1,349,369	570,751	1,518,337	
126,883	1,130,403	97,716	978,311	29,167	152,092	

Bremen.

Hamburg.

Lubeck.

Stettin.

Emden.

Königsberg.

<i>Mannheim.</i>											
3,718,792	|	5,520,671	|	3,166,855	|	4,734,717	|	551,937	|	785,954	|
<i>Rheinau.</i>											
2,423,782	|	1,076,545	|	2,388,038	|	1,828,022	|	35,664	|	48,523	|
<i>Ludwigshafen.</i>											
2,474,128	|	2,872,739	|	1,909,392	|	2,000,591	|	564,746	|	872,148	|
<i>Duisburg-Ruhrort.</i>											
10,545,663	|	28,913,462	|	1,238,792	|	9,070,563	|	9,336,871	|	19,842,899	|
<i>Magdeburg.</i>											
699,086	|	550,520	|	245,432	|	199,737	|	423,654	|	350,883*	|
<i>Berlin.</i>											
2,682,174	|	3,931,270	|	2,148,615	|	3,389,570	|	533,559	|	541,700	|
<i>Riesa.</i>											
245,893	|	643,175	|	176,448	|	501,199	|	69,447	|	141,976	|
<i>Breslau.</i>											
494,176	|	1,565,613	|	205,780	|	505,269	|	288,396	|	1,060,344	|
<i>Cosel.</i>											
1,671,553	|	3,698,247	|	724,277	|	1,367,710	|	1,947,276	|	2,330,537	|
<i>Frontier traffic via Emmerich.</i>											
Downstream			Upstream			Total					
6,933,416	|	17,638,484	|	5,038,014	|	19,823,047	|	11,971,430	|	37,461,531	|
Coal, coke, building material, wood, iron, cereals, foodstuffs, fats and oils.											

* Figures for 1913 incomplete.

7.

MOTOR TRANSPORT.

The recovery of motor traffic throughout Germany is very much hampered by the dearth of home-produced spirit for motor vehicles. As a result of the unfavourable economic situation and of the deliveries of benzol which Germany is compelled to make, there is only a very limited supply of German benzol available for use. Owners of motor vehicles have therefore no alternative but to purchase their supplies of spirit abroad and at high prices.

The high price of tubes and tyres also has a detrimental effect upon the recovery of the motor transport traffic. The number of motor vehicles for carrying goods and passengers is far lower than before the war. According to the statistics for February 1st, 1920, there were in Germany only 32,450 touring cars, as against 60,876 on 1.1.1914, and 9,369 motor bicycles, as against 22,557, on 1.1.1914. For their relations with foreign countries too, the owners of motor vehicles meet with great difficulties. This is partly because the new States bordering on Germany which have been formed since the war have not yet adhered to the International Convention of October 11th, 1909, with reference to motor traffic, and partly because some States enforce payment of disproportionately high sums as security against evasion of customs duties when foreign motor vehicles cross the frontier.

There is nothing of importance to add with regard to air traffic.

GREAT BRITAIN.

I.

RAILWAYS.

The position of the railways of the United Kingdom before the war is shown in the general report prefixed to the railway returns for the year 1913 issued by the Board of Trade in 1915 (Cd. 8038).

On the outbreak of war, control was taken by the Government over the railways in Great Britain under the Regulation of the Forces Act, 1871, the control being exercised on behalf of the Government by a Committee of general managers, styled the Railway Executive Committee. The relations of the Government with the companies were subsequently defined by agreements concluded between the companies and the Board of Trade, under which the companies' receipts were guaranteed on the basis of their 1913 earnings with provision for deferred maintenance. These agreements have now been the subject of consideration by a committee appointed under the presidency of Lord Colwyn. Control was extended, under similar conditions, to Irish railways as from the 1st January, 1917.

A detailed statement in regard to the control of railways during the war, with particulars of the agreements, and of their position at the end of the war, in regard to finance, rates, statistics, labour, traffic, congestion, development, etc., is given in a paper presented to Parliament by the Ministry of Transport upon the Estimates for 1920-1921 (Cmd. 654). Statements showing the results of railway working during the period of Government control up to August, 1919, when the Ministry of Transport Act, 1919, came into force, are given in Parliamentary papers (Cmd. 147 and 402).

The Ministry of Transport was established to co-ordinate and exercise the powers and duties of existing Government Departments in relation to railways, light railways, tramways, canals, waterways and inland navigation, roads, bridges and ferries, and vehicles and traffic thereon, harbours, docks and piers. Certain temporary powers also were conferred on the Minister, who was charged with the responsibility for initiating and formulating a transportation policy within two years from the passing of the Act. In accordance with this direction, it is intended to introduce a new Transport Bill in the next Session of Parliament. Government control of the Railways under the conditions outlined ceased on August, 15th 1921.

Material.—An indication of the condition of rolling-stock and of traffic congestion in December, 1919, is given in a statement by the Minister of Transport to members of Parliament (Cmd. 493). Since that date, however, conditions have greatly improved.

Traffic.—From the beginning of 1920, a series of monthly railway statistics, compiled on a new basis, has been issued by the Ministry of Transport.

Light railways were not brought under Government control during the war, but little or no progress was possible in that period, although it is recognised that development will be required in the future in the interests of agriculture and industry.

London local railways were also excepted from control, and these, as well as many of the tramway and public service vehicle undertakings throughout the kingdom, both publicly and privately owned, have recently been authorised to increase their statutory fares and charges. War arrears of repairs and renewals of rolling-stock are being steadily overtaken. Revised statistics applicable to tramway undertakings are now being compiled by the Ministry of Transport.

Rates and Fares.—The present increases over pre-war rates are 75 % on passenger fares and about 112 % on all goods rates.

Consumption of fuel for the years 1913, 1919 and 1920.

Year.	English Railways.	Scottish Railways.	Irish Railways.
	Tons.	Tons.	Tons.
1913	11,086,232	2,060,480	429,911
1919	10,249,100	2,096,400	412,600
1920		13,800,000	(Estimated for United Kingdom.)

Sources of Supply:

Home coal-fields, usually those adjacent to the respective railway companies' systems.

Average cost per ton: The only available indication consists of average large steam coal prices f. o. b.—

	s.	d.
1913	20	2
1919	47	3
1920	from 68 9	(Jan.)
	to 80 0	(Dec.)

ANNEX I.

Report to the Board of Trade on the annual statement for 1913¹.*Preliminary Remarks.*

Up to the end of the year 1912 the Annual Returns were based on statistics furnished to the Board of Trade by the railway companies under Section 9 of the Regulation of Railways Act, 1871, as amended by Section 32 of the Railway and Canal Traffic Act, 1888.

On January 1st, 1913, a new Act—the Railway Companies (Account and Returns) Act, 1911—came into force, whereby each railway company in the United Kingdom is required to furnish to the Department annual accounts and statistical returns in accordance with forms set out in the first schedule to the Act.

The expression “railway company” is defined in Section 6 (1) of the Act as meaning “any company or person working a railway under lease or otherwise.” Hence the Act does not apply to non-working companies, and in order to obtain returns in respect of these it has been found necessary to fall back on the provisions of the earlier Acts referred to above.

In the detailed tables the accounts and statistical returns of working companies (including all joint committees separately treated in Abstract J of the parent companies’ accounts), furnished under the Act of 1911, are summarised in Section A; and the statements obtained with regard to non-working companies are summarised in Section B. Section C relates to capital on which dividend is guaranteed by railway companies, but which is not included as railway capital in Sections A and B; and certain miscellaneous information is given in the Appendices following Section C.

The information given in Section A is of a much more complete and detailed character than that contained in previous returns. Particulars are given for the first time in respect of:

- Receipts and expenditure on capital account;
- Appropriation of net income;
- Miscellaneous property owned; and
- Number of live-stock carried.

The accounts of revenue receipts and expenditure have been expanded so as to show particulars under each of the following heads:

- Railways;
- Passenger road vehicles;
- Steamboats;

¹ Owing to the voluminous nature of the Report, it has been thought impracticable to reproduce it here *in toto*. The references are, of course, to the Sections, Appendices, etc., which figure in the Report itself.

Canals ;
 Docks, harbours, and wharves ;
 Hotels, and refreshment rooms and cars where catering is carried on by the companies ;
 Other separate business ;
 Miscellaneous net receipts.

Additional information has been given with regard to the length of running lines (first track, second track, &c.), rolling stock, and mileage of each company.

The particulars given under the head of " Number of passengers, " and " Tonnage of goods, " show, in addition to those previously given with regard to the *total* numbers and tonnage carried by each company, the number and tonnage *originating on the system of each company* ; traffic booked through, over the lines of more than one company, being included, in these latter figures, by the *booking* company only.

Changes of basis and consequent non-comparability of figures for 1913 with those of previous years.

Owing to the changes of basis consequent on the requirements of the new Act, or made incidentally in connexion therewith, the figures for 1913 are not properly comparable with those for previous years. Hence no attempt has been made to enter particulars for 1913 in the summary tables following the report ; the tables have been reprinted as they appeared in the returns for 1912.

Further information regarding changes of basis will be found under the appropriate headings below.

I. ACCOUNTS.

Authorised and paid-up Capital.

The detailed tables A 1 and B, are somewhat similar to the table No. 1 given in earlier issues of the Returns. Attention must be drawn, however, to the following differences of basis :—

(1) Tables A 1 and B show the amount of paid-up capital ranking for dividend or interest ; the table No. 1 in previous returns showed the *total* amount of capital paid up, whether ranking for dividend or not. In the case of nearly all the companies dividend or interest was payable on the whole of the capital paid up at the end of the year under review. In connection, however, with the vesting in the Metropolitan Company, of the Great Northern and City Railway, the Metropolitan Company issued £ 1,050,000 of capital on which dividend did not accrue in 1913, and the *total* amounts of capital paid up but not ranking for dividend, at the end of the year, were as follows :—Ordinary, £ 1,005,000 ; Preference, £ 90,000 ; Guaranteed, £ 2,000 ; Total, £ 1,097,000.

(2) The capitalised value of rent-charges, which at the end of 1912 amounted to £1,145,000, was included in previous returns as paid-up capital, under the head of "Loans"; it is now excluded from the total paid-up capital, and is included in the figures given in the column headed "Deductions from borrowing powers, &c."

(3) Certain companies formerly included in Table 1 have been excluded from the new tables A 1 and B as being of the nature of *dock*, &c., companies rather than railway companies, or as belonging more properly to the new table forming Section C. One company has been excluded as really having no separate capital, and three companies have been excluded whose undertakings have become derelict.

(4) In a number of cases the companies have altered the basis of their accounts in such manner that these show, in comparison with the accounts of previous years, apparent increases and decreases where no actual change has taken place.

In the following table the totals for 1912, published in the last issue of the returns, have been modified, in respect of the changes referred to under (1) to (4) above, so as to be fairly comparable with those for 1913; and the increases and decreases, which appear in the last line of the table, show, with substantial accuracy, the real increases and decreases in the latter year. The figures printed in italics represent the amounts (included in the figures in ordinary type) by which the capital of the various companies has been nominally increased or reduced on the conversion, consolidation, and division of stocks. At the end of the year 1913 the net nominal additions formed 18.8 per cent. of the ordinary capital, 12.8 per cent. of the preference and guaranteed capital, 12.3 per cent. of the loans and debenture stock, and 14.9 per cent. of the paid-up capital of all classes.

The capital authorised to be raised at the end of 1913, as shown above is exclusive of £5,025,231 of share capital, and £1,430,143 of loan capital, issued, or to be issued, as additional stock to provide authorised money.

The total amount of paid-up capital stated in the table is somewhat in excess of the actual amount, the capital of certain companies and committees shown separately in table A 1 or in Section B having been subscribed in part by other railway companies. It appears that the duplication thus arising amounted, at the end of 1913, to about £11 millions.

Of the total paid-up capital at the end of the year as shown in the table, ordinary stock formed 37.0 per cent., preference and guaranteed 35.9 per cent., and loans and debenture stock 27.1 per cent.

	Authorised Capital.		
	By shares and stock.	By loans and debenture stock.	Total.
	Thousand £.	Thousand £.	Thousand £.
Total for 1912, as shown in last issue of returns	1,008,698	401,954	1,401,652
Estimate of additions and deduc- tions required to render total for 1912 comparable with total for 1913	—7,989	+1,508	—6,481
New total for 1912 on basis approximate to that of the total for 1913	1,000,709	403,462	1,404,171
Total for 1913 :			
Table A 1	962,382	390,366	1,352,748
Section B	42,861	16,943	59,804
Capital raised but not rank- ing for dividend.	—	—	—
Altogether. . .	1,005,243	407,309	1,412,552
Approximate real increase or de- crease in 1913 as compared with 1912	+4,534	+3,847	+8,381

Paid-up Capital.

Ordinary.	Preference.	Guaran- teed.	Loans.	Debenture stock.	Total.
Thousand £.	Thousand £.	Thousand £.	Thousand £.	Thousand £.	Thousand £.
493,176 +93,098	356,117 +43,941	125,300 +10,061	12,343 +6	348,028 +44,356	1,334,964 +198,462
—2,648 —982	—2,781 +40	—863 +301	—156 +6	—71 +194	—6,519 — 453
490,528 +92,116	353,336 43,981	124,437 +17,362	12,187 —	347,957 +44,550	1,328,445 +198,009
467,399 +91,971	350,112 43,932	118,143 +17,363	11,371 —	338,041 +44,018	1,285,066 +197,284
24,660 +855	4,594 +50	6,190 —	732 —	11,672 +532	47,848 +1,437
1,005	90	2	—	—	1,097
493,064 +92,826	354,796 43,982	124,335 +17,363	12,103 —	349,713 +44,550	1,334,011 +198,721
+2,536 + 710	+1,460 + 1	—102 + 1	—84 —	+1,756 —	+5,566 + 712

Rates of Dividend and Interest.

Calculations based on the detailed tables A 1 and B have been made with the object of ascertaining, in respect of the year 1913, as regards capital ranking for dividend or interest, the average rate per cent. of the dividend *paid* on the share capital of each class, and the average rate per cent. of the interest *payable* on the loan capital of each class.

The results of the calculations are given on pages 39 and 40.

Receipts and Expenditure on Capital Account.

The returns now presented contain (tables A 2 and A 3) information regarding the receipts and expenditure, on capital account, of working companies only. Similar information will be given in future with regard to non-working companies also.

The tables A 2 and A 3 include a considerable amount of duplication arising from subscriptions made by working railway companies to the capital of other working railway companies, or to the capital of joint committees separately enumerated in the tables. The exact extent of this duplication is not clearly shown by the accounts. It appears probable, however, that the total duplication in table A 2, both under the head of receipts and under that of expenditure, amounts to approximately £ 27 millions. The totals, including such duplication, are as follows:—

Receipts	£ 1,143,582,000
Expenditure	£ 1,179,445,000

There was thus a deficit on capital account of nearly £ 36 millions. According to the balance sheets, however, the reserve funds of the working companies, at the end of 1913, amounted to approximately £ 22 millions, and large sums of money were also held by the companies in connection with savings banks, and superannuation and other provident funds.

The details of capital expenditure (*a*) up to the end of the year 1913, and (*b*) during the year 1913, are shown on page 41.

Table A 4 shows the revenue receipts and expenditure, under various heads, of each working company, in 1913. The figures given on page 42 for the United Kingdom have been extracted from that table or calculated therefrom:—

These figures show a profit on the undertakings of each kind. The detailed statements in table A 4 indicate that in a number of cases the accounts of individual companies show losses on subsidiary undertakings. Such losses, however, may of course have been more than offset by gains accruing from the favourable influence exercised by these undertakings on other branches of the business of the companies concerned.

The total net income (£ 52,131,000) is not properly comparable with the total net receipts shown in previous issues of the returns, as the latter did not include certain miscellaneous net receipts (chiefly interest and dividends from investments in other companies, and general interest) which are included in the total net income now shown.

	Rates of Dividend.							
	On the capital including nominal additions and deductions.				On the capital including nominal additions and deductions.			
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.	Scotland.	Ireland.	United Kingdom.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Ordinary ¹	4.05	2.01	4.36	3.74	4.71	3.83	4.32	4.61
Preference ¹	3.49	3.96	3.89	3.57	4.00	4.50	3.89	4.08
Guaranteed ¹	3.99	3.99	4.12	4.00	4.65	4.80	4.22	4.65
Loans ²	3.50	3.72	4.10	3.55	3.50	3.72	4.10	3.55
Debenture Stock ²	3.39	3.57	4.01	3.43	3.93	3.92	4.08	3.93
All classes	3.71	3.06	4.14	3.64	4.29	4.17	4.17	4.27

¹ Rates actually paid.² Rates payable.

The following statement shows, in respect of the capital ranking for dividend or interest, the amounts of each description (including nominal additions), classified according to the rates of dividend paid on the share capital, and the rates of interest payable on the loan capital:—

	Ordinary,		Preference.		Guaranteed.		Loans.		Debenture Stock.	
	Thous'd £.	Per- centage of total.	Thous'd £.	Per- centage of total.	Thous'd £.	Per- centage of total.	Thous'd £.	Per- centage of total.	Thous'd £.	Per- centage of total.
Nil.....	50,055	10.2	9,475	2.7	—	—	9	0.1	—	—
Not above 1 per cent	29,351	5.9	119	0.0	—	—	—	—	—	—
Above 1 and not above 2 per cent..	33,800	6.9	4,113	1.2	—	—	—	—	3	0.0
2 " " 3 " " ..	117,629	23.9	114,010	32.1	23,211	18.6	39	0.3	193,004	55.2
3 " " 4 " " ..	40,810	8.3	164,050	46.3	65,862	53.0	11,592	95.8	112,644	32.2
4 " " 5 " " ..	78,403	15.9	61,774	17.4	33,166	26.7	457	3.8	42,850	12.3
5 " " 6 " " ..	26,043	5.3	1,165	0.3	2,012	1.6	6	0.0	1,212	0.3
6 " " 7 " " ..	113,045	23.0	—	—	82	0.1	—	—	—	—
7 " " 8 " " ..	491	0.1	—	—	—	—	—	—	—	—
8 " " 9 " " ..	1,628	0.3	—	—	—	—	—	—	—	—
9 " " 10 " " ..	804	0.2	—	—	—	—	—	—	—	—
Total capital ranking for dividend or interest...	492,059	100.0	354,706	100.0	124,333	100.0	12,103	100.0	349,713	100.0
Amount not ranking for dividend or interest...	1,005	—	90	—	2	—	—	—	—	—
Total capital paid up...	493,064	—	354,796	—	124,335	—	12,103	—	349,713	—

	Up to the end of the year 1913.	During the year 1913 only.
RAILWAY :—	£	£
Lines belonging to working companies :—		
Open for traffic	806,258,000	4,188,000
Not open for traffic	3,342,000	1,602,000
Lines leased	1,667,000	50,000
„ jointly owned	44,543,000	330,000
„ „ leased	1,485,000	2,000
Rolling stock	143,701,000	1,888,000
Manufacturing and repairing works and plant :—		
Land and buildings	12,567,000	163,000
Plant and machinery	6,457,000	45,000
OTHER :—		
Horses	269,000	1,000
Road vehicles employed in the conveyance of passengers and in the collection and delivery of parcels and goods	348,000	<i>Cr. 16,000</i>
Steamboats	6,781,000	<i>Cr. 89,000</i>
Canals	21,079,000	<i>Cr. 11,000</i>
Docks, harbours and wharves	47,152,000	955,000
Hotels	8,153,000	89,000
Electric power stations, etc.	4,554,000	228,000
Land, property, etc., not forming part of the railway or stations..	39,817,000	324,000
Subscriptions to other companies:-		
To other railway companies	15,564,000	173,000
To companies other than railway companies	2,072,000	1,000
Miscellaneous	4,580,000	296,000
UNCLASSIFIED.	9,056,000	—
TOTAL	1,179,445,000	10,219,000

No corresponding figures respecting expenditure on Capital Account are available for earlier years.

Revenue Receipts and Expenditure.

	Gross Receipts.	Expenditure.	Net Receipts.	Proportion of expenditure to gross receipts under each head.	Proportion of net receipts under each head to total net receipts.
	£	£	£	Per cent.	Per cent.
Railways	124,860,000	78,874,000	45,986,000	63.17	88.21
Passenger Road Vehicles	126,000	123,000	3,000	97.26	.01
Steamboats	2,579,000	2,434,000	145,000	94.39	.28
Canals	1,101,000	750,000	351,000	68.11	.67
Docks, harbours, and wharves.	3,735,000	2,459,000	1,276,000	65.85	2.45
Hotels, and refreshment rooms and cars where catering is carried on by the companies	3,197,000	2,641,000	556,000	82.61	1.07
Other separate businesses	117,000	39,000	78,000	33.10	.15
Miscellaneous net receipts.	3,736,000	—	3,736,000	—	7.16
Total	139,451,000	87,320,000	52,131,000*	62.62	100.00

* Net income,

In the earlier issues of the returns particulars were given under the heads of "receipts from" and "expenditure on" (a) railway working, and (b) steamboats, canals, docks, harbours and wharves. Those particulars are not comparable with the particulars shown under the new headings, the allocation of receipts and expenditure, as between railway and other undertakings, having been made, in 1913, on a basis differing from that of previous years.

Receipts in respect of Railway Working.

It will be seen from the detailed table A 5 that the total gross receipts from railway working in the United Kingdom in 1913 were as follows:—

	£
From passenger train traffic	56,978,000
From goods train traffic	66,640,000
Miscellaneous	1,242,000
Total	124,860,000

Receipts from passenger train traffic included the following:—

From ordinary tickets :	£
First class	3,772,000
Second	1,097,000
Third	35,730,000
Total	40,599,000
From workmen's tickets	1,675,000
From season tickets :	
First class	1,678,000
Second class	629,000
Third class	2,561,000
Total	4,868,000
From mails	1,284,000
From parcels, excess luggage, &c. (less expenses of collection and delivery)	8,552,000
Total receipts from passenger train traffic	56,978,000

Receipts from workmen's tickets are shown separately for the first time. Up to the end of 1912 workmen's daily tickets were included with

ordinary third class tickets, and workmen's weekly tickets were included with third class season tickets.

	Receipts.	Percentage of total.
First class	£ 5,450,000	11.5
Second class	1,726,000	3.7
Third class	39,966,000	84.8
Total	£ 47,142,000	100.0

The average receipts per ticket issued, in 1913, were as follows :—
Ordinary tickets (return tickets being counted as two tickets) :

	s.	d.
First class	2	10.1
Second class	1	8.4
Third class	—	9.2
All classes	—	10.0
Workmen's tickets (on single journey basis)	—	1.6

Season tickets (on annual basis) :

	£	s.	d.
First class	15	14	7
Second class	7	11	7
Third class	6	5	9
All classes	8	3	2

Receipts from goods traffic included the following :—

Merchandise (less expenses of collection and delivery)	£	32,990,000
Live stock	»	1,678,000
Coal, coke, and patent fuel	»	22,909,000
Other minerals	»	9,063,000
Total	£	66,640,000

Separate figures for "coal, coke and patent fuel" are given in the returns for the first time.

The average receipts per ton were as follows :—From merchandise, 9s. 0.6d ; from coal, coke and patent fuel, 2s. 0.2d. ; from other minerals, 2s. 6.1d.

Of the total receipts from traffic, those from passenger train traffic formed 46.09 per cent., and those from goods train traffic 53.91 per cent.

The receipts from passenger train traffic and from goods train traffic per train mile and per mile of line open for traffic (first track) were as follows :—

	Per train mile.			Per open mile.		
	From Passenger Train Traffic	From Goods Train Traffic	Total	From Passenger Train Traffic	From Goods Train Traffic	Total
	d.	d.	d.	£	£	£
England and Wales . . .	50.59	102.29	69.39	2,980	3,451	6,431
Scotland	46.39	82.49	62.08	1,468	2,007	3,475
Ireland	46.44	85.48	59.08	704	662	1,366
United Kingdom	49.96	98.86	68.07	2,405	2,813	5,218

Expenditure in respect of Railway Working.

The total expenditure in respect of railway working in 1913, shown in Table A 6, is as follows :—

	£
Maintenance and renewal of way and works	12,562,000
Maintenance and renewal of rolling stock :	
Locomotives	6,305,000
Carriages	3,771,000
Wagons	3,748,000
Locomotive running expenses	18,166,000
Traffic expenses	24,180,000
General charges	2,792,000
Law charges	196,000
Parliamentary expenses	46,000
Compensation (Accidents and Losses) :	
Passengers	166,000
Workmen	298,000
Damage and loss of goods, &c.	740,000
Rates*	4,899,000
Taxes	7,000
Government Duty	286,000
Running powers (credit)	126,000
Mileage, demurrage and wagon hire (balance)	255,000
Miscellaneous	583,000
Total	78,874,000

* Including tithe rente charges.

The following statement shows the expenditure in respect of railway working (a) per train mile, and (b) per mile of line open for traffic :—

	Per train mile.	Per mile open
	£	£
England and Wales.....	44.71	4.144
Scotland	36.84	2.062
Ireland	36.87	853
United Kingdom.....	43.43	3.329

In connection with the statistics of working expenditure the following figures may be of interest as affording some indication of the course of prices of coal and materials. The figures quoted in the case relate to coal of all descriptions and not to those kinds only which are used for locomotive purposes.

Year	Average value per ton of Coal produced, as shown in the Reports of the Chief Inspector of Mines.	Average export price per ton of Coal, and of Iron and Steel Rails. (<i>Computed from the quantities and declared value of the exports.</i>)	
		Coal	Iron and Steel Rails
	s. d.	s.	£
1908	8 11	12.65	6.12
1909	8 0 ³ / ₄	11.20	5.79
1910	8 2 ¹ / ₄	11.63	5.86
1911	8 1 ³ / ₄	11.31	6.13
1912	9 0 ³ / ₄	12.57	6.16
1913	10 1 ¹ / ₂	13.82	7.13

It will be seen that the prices quoted were abnormally high in 1913.

The total quantities of coal consumed for locomotive purposes by the railway companies of the United Kingdom in each year from 1908 to 1913 inclusive were as follows :—

1908	12,493,000 tons.
1909	12,274,000 "
1910	12,472,000 "
1911	12,822,000 "
1912	12,636,000 "
1913	13,577,000 "

Appropriation of Net Income.

Table A 7 shows particulars of the total net income of each working company, and of the proposed appropriation thereof.

Allowance having been made for the estimated duplication arising in connexion with joint committees separately enumerated in the table, the totals for the United Kingdom are as follows :—

<i>Net Income</i>		£
Balance brought forward from Account at 31st		
December, 1912		1,109,000
Net income for year 1913		52,131,000
Appropriation from reserve		28,000
		<hr/>
Total		53,268,000

Proposed Appropriation.

Fixed charges :—

Interest on loans	361,000
Interest on debenture stock	11,448,000
Miscellaneous	4,055,000
Appropriation to reserve and other special purposes	1,301,000
Dividend on guaranteed and preference stocks	17,239,000
Dividend on ordinary stock	17,705,000
	<hr/>
Total	52,109,000
	<hr/>
Balance carried forward to 1914 account	1,159,000

The interest and dividend shown above do not include payments in respect of the capital of the companies included in section B of the returns.

II. STATISTICAL RETURNS.

Mileage of Lines Open for Traffic.

Table A I shows the mileage of lines open for traffic, owned, or leased or worked, by each *working* company at December 31st, 1913.

The totals for the United Kingdom are as follows :

	Running lines.						Sidings reduced to single Track.	Total of single Track, including sidings.
	Length of road. First Track.	Second Track.	Third Track.	Fourth Track.	Over four Tracks (reduced to single Track). ¹	Total miles reduced to single Track.		
	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.
Owned	22,363	13,010	1,598	1,241	664	38,876	14,271	53,147
Leased or worked	1,548	544	28	19	37	2,176	607	2,783
Together	23,911	13,554	1,626	1,260	701	41,052	14,878	55,930
From this there should be deducted, in respect of mileage included under "Owned" and also under "Leased or worked"	220	162	7	6	1	396	129	525
Giving a net total of	23,691	13,392	1,619	1,254	700	40,656	14,749	55,405
The total for 1912 published in the last issue of the returns was.	23,447	13,237	1,544	1,208	598	40,034	14,875	54,909
The increase or decrease in 1913 according to the returns was thus	+ 244	+ 155	+ 75	+ 46	+ 102	+ 622	— 126	+ 496

¹ i.e., Fourth Track, plus Fifth Track, plus Sixth Track, and so on.

It will be seen that the table shows a considerable increase, in 1913 as compared with 1912 in the length of running lines, with some decrease in the length of sidings. There is reason to believe, however, that the actual changes in 1913 were less than those indicated. The figures deducted above from the total of "owned" and "leased and worked" are *approximate* only, the ownership of certain small pieces of leased or worked line not being shown in the accounts. Moreover the increases and decrease shown in the last line of the table are probably due in part to revision of figures on re-measurement of lines, and to the more general adoption of a uniform method of distinguishing between running tracks and sidings, resulting in the transfer to "running lines" of certain pieces of line formerly regarded as sidings; and one company has excluded from its returns for 1913 a considerable length (about 100 miles) of *dock* sidings which were included in the returns for 1912.

Rolling Stock.

Particulars of the number of locomotives and vehicles of all kinds owned by each working company at the end of the year 1913 are given in Table A II. The totals for the United Kingdom are:—

Steam locomotives and tenders :	Number.
Tender engines	14,792
Tank engines	9,843
Tenders	14,971

Rail motor vehicles :

Number	214
Carrying capacity (seats)	11,078

Trains worked by electric power :

Electric locomotives	83
Electric motor cars carrying passengers :	
Number	1,019
Carrying capacity (seats)	51,219

Trailer cars :

Number	1,467
Carrying capacity (seats)	77,297

Coaching vehicles other than electric :

Passenger carriages :

Number	54,455
Carrying capacity (seats)	2,614,634
Other	22,159

Merchandise and mineral vehicles :—

Open wagons :	Number.
Under 8 tons	30,727
Of 8 tons and above	375,916
Covered wagons :	
Under 8 tons	20,785
Of 8 tons and above	71,165
Mineral wagons :	
Under 8 tons	4,000
Of 8 tons and above	182,019
Cattle trucks	22,459
All others	53,675
Railway service vehicles	49,691
Road vehicles employed in the conveyance of passengers and in the collection and delivery of parcels and goods :—	
Passenger vehicles	493
Goods and parcels vehicles	33,552

Some of these figures show, on comparison with the totals for 1912, rather large increases. There is reason however to believe that, for the purposes of the new returns, a careful re-enumeration was made, which resulted in the inclusion of rolling stock that had previously been omitted. In particular it appears that whilst duplicate stock is included throughout in the figures for 1913, a portion of such stock was probably omitted from the earlier returns.

Miscellaneous Property owned.

Table A III. shows particulars of certain property, other than railway property, owned by each company at the end of the year 1913. The totals for the United Kingdom are as follows :—

Steamboats :	Vessels.	Tonnage.
Exceeding 250 tons net	105	56,025
Not exceeding 250 tons net	118	12,415
Canals		Miles. 1,033
Docks, harbours and wharves		Length of quay in feet. 490,490
Hotels		Number. 113
Land		Acres. 30,496
Houses		Number. 58,006

No corresponding figures are available for earlier years.

Engine Mileage.

Table A IV. shows the mileage run by the engines of each company during the year 1913, and gives the following totals for the United Kingdom :—

	Coaching.	Goods.	Mixed.	Total.
	Miles.	Miles.	Miles.	Miles.
Loaded trains	264,258,000	140,449,000	661,000	405,368,000
Empty trains run for traffic purpose on either the forward or return journey	9,237,000	21,235,000	11,000	30,483,000
Shunting mileage	18,665,000	119,142,000	58,000	137,865,000
Other mileage (assisting, light, auxiliary &c.).		54,608,000		54,608,000
Total	292,160,000	280,826,000	730,000	628,324,000
		54,608,000		

Particulars under the heads of "Shunting Mileage" and "Other Mileage (Assisting, Light, &c.)" have not previously been compiled. The total obtained by adding together the figures given in the first two lines of the table above is fairly comparable with the train mileage shown in the returns for 1912 and 1911, thus :—

	Coaching	Goods	Total (including miles run by mixed trains).
	Miles.	Miles.	Miles.
1913	273,485,000	161,684,000	435,851,000
1912	258,768,000	151,893,000	412,520,000
1911	270,276,000	156,500,000	428,633,000

The figures for 1912 were affected by the great coal strike of that year.

Number of Passengers carried.

Table A V. shows in respect of each company (a) the number of passengers of each class travelling with ordinary tickets, return tickets being counted as two tickets ; (b) the number travelling with workmen's tickets, these being given on a single journey basis ; and (c) the number of season tickets of each class, on the basis of *annual* tickets. Particulars are given in respect of the *total numbers* carried by each company (passengers booked through over the lines of more than one company being included by each company), and also in respect of the *numbers originating on the respective companies' systems*, the latter including those passengers only who were *booked* by the respective companies. The totals for the United Kingdom are as follows :—

	Total carried.	Originating on the systems of the respective companies.
	Number	Number
Passengers holding ordinary tickets :		
First class	31,437,000	26,531,000
Second class	13,579,000	12,907,000
Third class	1,094,833,000	936,698,000
Total ...	1,139,849,000	976,136,000
Passengers holding workmen's tickets	314,912,000	256,921,000
Season tickets :		
First class	138,142	106,704
Second class	88,998	82,964
Third class	510,679	407,146
Total ...	737,819	596,814

Whilst the figures set out in the first column may usefully be given in view of the fact that figures on this basis only are available for earlier years, it is obvious that those in the second column afford a far better indication of the total passenger movement in the country taken as a whole. Prior to 1913 the accidental fact that a passenger in the course of a single journey passed over lines belonging to two or more systems led to his being shown as a separate passenger by two or more companies, and given undue weight in the totals.

If it be assumed that each annual season ticket represents 600 single journeys, the figures given above under the head of "originating on the systems of the respective companies" represent the following total numbers of single tickets :—

	Number.
First class	90,554,000
Second class	62,686,000
Third class	1,437,906,000
Total	1,591,146,000

On these figures the proportion per cent. borne by the number of each class to the total number is as follows :—

First class	5.7
Second class	3.9
Third class	90.4

Tonnage of Goods and Number of Live Stock carried.

Table VI. shows the following totals for the United Kingdom :—

	Total carried.	Originating on the systems of the respective companies.
	Tons.	Tons.
General merchandise	121,360,000	72,908,000
Minerals :		
Coal, coke, and patent fuel.	345,115,000	226,936,000
Other minerals	101,726,000	72,193,000
	Number	Number
Live stock :		
Horses	Not separately shown	204,000
Cattle		5,272,000
Calves		954,000
Sheep		14,051,000
Pigs		3,042,000
Miscellaneous		21,000
Total of Live Stock . . .	32,899,000	23,544,000

According to the statistics of mines and quarries the total quantity of coal produced in 1913 was 287,430,000 tons.

As in the case of passenger traffic the figures in the second column are those which really best indicate the total tonnage moved, tonnage booked through over more than one system figuring in this column once only. The amount of duplication from this source in the method of record previously in force was, in fact (as the above figures show), considerably greater in the case of goods traffic than in that of passenger traffic.

Electrical working of Railways.

The table given in Appendix 2 contains particulars of the electrical working of railways in the year 1913. With one exception (the Bessbrook and Newry Tramway, three miles in length) all the lines included in the table are English lines.

At the end of the year the total length (in equivalent of single track) worked *solely* by electricity was 205 miles 70 chains; the length worked *partly* by electricity being 314 miles 52 chains. The corresponding lengths at the end of 1912 were 210 miles 60 chains, and 281 miles respectively.

The number of miles travelled was as follows:—

	Train miles.		Car miles.	
	1913.	1912.	1913.	1912.
	Miles.	Miles.	Miles.	Miles.
Passenger trains	26,903,000	24,982,000	102,698,000	95,759,000
Goods and mineral trains (including 'mixed,' i.e., goods and pas- senger, trains).	33,000	32,000	185,000	173,000
Total . . .	26,936,000	25,014,000	102,883,000	95,932,000

The total quantity of electricity used in 1913 was 268,289,000 Board of Trade units as compared with 252,926,000 in 1912. These figures do not represent the entire quantity of electrical energy generated, the quantity lost in conversion being excluded.

III. GENERAL OBSERVATIONS.

It has been customary to give at the end of the annual reports a summary statement comparing the more important totals for the year under review with those for the year immediately preceding, but no exact comparison of this kind can be made between the totals for 1913 and those for 1912, owing to the changes of basis which have been indicated.

It is clear, however, from the statistics available, that in 1913 the railway companies enjoyed a considerable measure of prosperity. From the shareholders' point of view one of the best indices of the net result of railway working in a particular year is that afforded by the statistics showing the average rate per cent. per annum of the dividend paid by the companies collectively on their total ordinary capital. During the nine years ending 1912 the average rate paid on the total ordinary capital (*exclusive of nominal additions*), whether ranking for dividend or not, was 4.08 per cent., the highest annual average being 4.45 in 1911, and the lowest 3.67 in 1908. The average for the year 1913 was 4.60. The basis of the rate was slightly altered as between 1912 and 1913, but the alteration does not appreciably affect the comparison.

The statistical continuity of these returns, already broken by the changes consequent on the introduction of a new system, will unfortunately be further affected by the special arrangements made for working the railways during the war, and new difficulties will arise in connection with the returns for 1914 and 1915.

ANNEX II.

Statement as to Railways presented by the Ministry of Transport.*a) Relations between the Government and the Companies.*

In a letter addressed to the Railway Companies by Mr. Runciman, then President of the Board of Trade, on September 5th, 1916, it is stated that "the Government undertakes to extend the period of guarantee of net receipts to two years after the termination of the war."

These agreements were supplemented by several further arrangements on other points made by successive Governments during the war.

On the cessation of hostilities at the end of 1918, the Government were not free simply to hand back the railways to their owners, since they were bound by the undertakings of their predecessors to extend the period of the guarantee of pre-war net receipts for two years after the termination of the war. The financial position to be faced was serious. Successive increases in wages throughout the country, and in railwaymen's wages in particular, and in the cost of material had brought railway expenditure to a level which involved a heavy burden on the exchequer to meet the guarantee of net receipts.

The loss in working in respect of the financial year 1919-1920 was estimated, on the formation of the Ministry of Transport, at £ 45,000,000, after credit has been given for all Government traffic, apart from certain disturbing factors and the possibility of an increase in freight rates. The actual deficiency for the financial year 1919-1920 is over 40½ millions, and this in spite of approximately 9 millions from increase of freight rates.

The shortage of labour and material during the war, the work undertaken by the railway companies in manufacturing for war purposes, and the need for keeping expenditure down to the minimum compatible with safety had resulted in the accumulation of heavy arrears of maintenance and renewals, both as to permanent way and to rolling stock. These it was essential to make good, and under the agreement, the expenses, inflated by high post-war costs, would fall upon the Government. The Railway Companies were also in arrear on their capital expenditure, and it was essential to embark upon such expenditure in order to meet the pressing needs of development and the restoration of the trade of the country. On this expenditure the companies under the agreements were entitled to claim interest from the Government.

It was further obvious that a drastic revision of rates and charges on goods would be required to restore financial equilibrium.

The Government, therefore, found itself under the necessity of setting up some machinery both for exercising a scrutiny of railway expenditure and for devising some means of increasing railway revenue.

During the war the system of audit of the railway companies' claims for compensation under the railway agreement had consisted in a mutual investigation of the accounts of the various companies by other railways' accountants working under the instructions of the Railway Executive Committee. Points of difficulty were considered by an Accountants' Sub-Committee, and, if necessary, referred to a Committee of General Managers and Accountants' Sub-Committee, and thereafter to the Government Auditors, Sir A. Wyon and Sir Wm. Plender. This system was adopted during the war but it was obvious that with a return to peace Parliament would insist upon some closer departmental check upon the very serious expenditure and liabilities which fell upon public funds.

The necessity for the continuance of control and the Government guarantee was, however, only part of the problem of the railways. The question of wages had remained in an unsatisfactory state during the war, and a revision both of the scales and of the methods by which wage questions could be settled was overdue; the drain upon the railways during the war and the disturbance of the normal flow of traffic made an immediate return to ordinary competitive working impossible and some continuance of joint working for traffic purposes was necessary; the rise in the cost of transportation made the consideration of all possible future economies essential in order that the trade of the country should be assisted by transportation facilities at the lowest possible cost. It was to meet these problems that the Ministry of Transport was created, and the following notes deal with the steps which are being taken.

b) *Finance.*

The Government guarantee which was to continue for two years after the termination of the war was limited to a period of two years from August 15th, 1919, and under the Act administrative machinery has been created to bring under close review the expenditure of public money for which the Minister is responsible.

Since the amount due from public funds depends upon the earnings of the railways, the Minister is directly concerned in the administration of the companies. To safeguard the exchequer, while leaving the Companies discretion in directing their own financial policy, constitutes a problem of administration which the Ministry is working out in close consultation with the Companies.

As regards the investigation and audit of the compensation claims, it has been deemed necessary to retain the expert assistance of the railway accountants, but to associate the Ministry's accountants closely with them in their investigations and in their discussions. All accounts are still certified by the Government's accountants, but difficult points are only decided after consultation with the Ministry and subject to Treasury approval. This involves the examination of a gross annual expenditure at the rate of, approximately, £ 200,000,000 per annum. The necessary

staff of expert railway accountants has been appointed in connection with these duties.

All proposed capital expenditure of the Railway Companies is most closely examined by the Engineering, Traffic, Finance and other Departments of the Ministry and submitted to the Treasury before authority to claim interest from the Government is given. In the course of this examination, the technical departments are able to suggest alterations and improvements with a view to reducing expenditure, in which direction important results have been achieved. The Technical Departments are able to guide development in the right direction by levelling up to the best practice, and to ensure that no opportunity for standardisation is lost. This is of particular importance in connection with the many proposals for electrification now being received, to deal with which a special expert committee has been set up.

Arrangements are in hand for important revenue expenditure to be submitted for examination, so that here again no opportunity of standardisation or economy may be lost.

The allocation of expenditure between capital and revenue is a point to which special attention is paid in view of its important financial bearing on the liabilities of the Government, and before any claim is passed the accountants are required to satisfy themselves that the proposed division is fully justified. It will be appreciated that as any deficit on revenue account is made up by the Government the whole cost of works charged to revenue is a potential Government liability, whereas on capital expenditure the liability is limited to interest on expenditure during the continuance of control.

The best means of speedily increasing railway revenue presented a formidable problem which at once engaged the attention of the new Ministry. Unless transportation by rail was to continue to be subsidised by the general taxpayer to the extent of roughly £ 50,000,000 a year, it was a matter of the greatest urgency to bring into effect a drastic revision in railway rates and charges. Under the law prior to the passing of the Ministry of Transport Act statutory maxima were imposed for all rates, and even within these maxima increases were subject to proceedings before the Railway and Canal Commission. The legality of an increase of 4 per cent, in goods rates brought into operation in July, 1913, was contested and formed the subject of litigation which in one case has only been determined by a decision of the Railway and Canal Commissioners in March, 1920.

Whether the object was to carry out an interim revision on some arbitrary basis or to make a systematic revision of the existing complicated system of rates and a classification of commodities, some new machinery was obviously essential. This was foreseen in the Ministry of Transport Act, which provided for the establishment of a Rates Advisory Committee fully representative of all interests, whose advice the Minister was bound to seek before himself determining upon any revision of rates. On the formation of the Ministry the necessary staff to deal with rates questions was formed and the personnel of the Committee was selected. The Committee was established in October and was at once asked to advise upon means

of raising an additional revenue of £ 50,000,000 a year from rates and charges on goods traffic. Their report was adopted by the Minister, and the increased rates recommended took effect as from January 15th, 1920, and it is hoped that, *apart from the deferred liabilities under the agreements*, the Railway Companies will be able to meet their operating expenses and earn net receipts on the basis of 1913, thus ceasing to be a direct charge upon the taxpayer of the country.

c) Rates.

Having completed their enquiry into the temporary increase of rates necessary to restore the financial equilibrium of the railways, the Rates Advisory Committee are now embarking upon the larger and more important question of a throughout and scientific revision of the basis of railway rates and charges. Such a revision is overdue both in the interests of the traders and the railways.

The present Parliamentary classification of goods for the purpose of conveyance charges is at least 30 years old, and although an endeavour is made to keep the working classification up to date, there are, undoubtedly, certain anomalies owing to changed conditions of trade, new uses of materials, etc.

In originally determining the class, it is evident that the value of the goods was largely taken into consideration, and although this should probably enter into the question, it is for consideration whether more weight should not be given to the cost of the service and the conditions under which the traffic is conveyed as to quantity, bulk, regularity of flow, method of packing, etc.

Class rates have been provided for the various classes on a more or less uniform scale throughout the country, but not more than 25 per cent. of the total business is carried at these class rates, the remainder being carried at what are known as "exceptional" rates, which are lower than the class rates. These exceptional rates are really specific rates for a certain commodity between a pair of stations (sometimes for specific quantities); and in framing them a variety of considerations have been taken into account, such as the risk of loss or damage, the method of packing, the quantities in which the commodity moves, the regularity of forwarding, water, road, and foreign competition, etc.

The general result has been that a most complex system of varying rates has been built up, there being probably hundreds of millions of different rates on the railway companies' books, with inevitable anomalies.

At all recent enquiries into railway matters there has been considerable agitation on the part of the traders to have the cost of cartage eliminated from the rates. There are also objections to the present practice from the railway companies' point of view, and these have been particularly emphasised in recent years owing to the fact that the cost of cartage has increased out of all relation to other railway costs, and the Companies were unable to adjust these, as the charge for the service was included in the rate, and any alteration would have meant adopting the cumbersome process

of advertising and, if necessary, justifying an increase of rates under the provisions of the Railway and Canal Traffic Act of 1894.

Other anomalies arise from different causes, and it will be evident that a re-classification and simplification is most desirable.

The Rates Advisory Committee propose dividing their enquiry into three stages. First, they will consider the general principles that should be adopted as the future basis of rates and charges; secondly, if they favour the maintenance of a classification of goods, they will consider how the various commodities shall be classified; and lastly, the question of the appropriate scale of charges to be applied to the various groups.

To assist them in their labours a questionnaire on the general principles has been addressed to the Association of Chambers of Commerce, the Federation of British Industries, the Mining Association of Great Britain, the Central Chamber of Agriculture, the Mansion House Association on Railway and Canal Traffic, and the Railway Companies' Association. When the replies of these various bodies have been received it is proposed to make their suggestions known so that other Trade Associations and traders may have an opportunity of making any representations they may wish to the Committee.

d) *Statistics.*

In order to economise labour during the war the Railway Companies found it necessary to suspend a considerable amount of the statistical information which they normally maintained.

British Railway Statistics were deficient in many important respects before the War, and the restoration and extension of statistics was an essential preliminary to securing economy in operation and construction and to the systematic revision of rates.

Without adequate statistics it would be impossible to make the best practice the standard for all companies or to secure the maximum degree of standardisation in all railway equipment, including permanent way, rolling stock, signalling and electrical working. The development of electrification on standard lines is a matter of special importance.

The necessary organisation was accordingly set up and arrangements were made with the full co-operation of the Railway Companies to institute for each railway system as many of the new returns as practicable from the beginning of January, 1920, including ton-mile statistics (for coal and coke, for other minerals, and for general merchandise separately), tons and receipts of principal traffic, commodity ton-miles, wagon-miles, train and engine hours and train and engine mileage in greater detail than hitherto. Ton-miles are the only satisfactory measure of the amount of work done by the railways, and the results to be deduced from them in conjunction with other information include the average length of haul, the average train load, the average wagon load and the average density of traffic over each company's system—all of which are important factors in dealing with congestion.

Tons and Receipts of Principal Traffics.—The Railway Companies (Accounts and Returns) Act, 1911, required all companies to show in their annual reports the tonnage of the principal traffics originating on their systems. The choice of the traffics, however, was substantially left to the discretion of the railway companies, and consequently it was not possible to ascertain the total tonnage of any specific commodity—except coal, coke and patent fuel—conveyed on the railways, or the receipts derived therefrom.

The new statistics provide for the tons and receipts of 72 main commodities, and the traffics to be included under each commodity heading have been classified in order to secure uniformity of practice throughout the country.

Commodity Ton-miles.—Ton-miles in respect of each of the commodities are to be compiled for one four-weekly period during the year. The average distance the traffic was conveyed will then be ascertained by dividing the ton-miles by the tons carried, but the information will also be tabulated to show the quantity of traffic conveyed each distance and the receipts therefrom. These figures, used in conjunction with the tons and receipts for the whole year, provide a valuable guide for estimating the probable financial results of any contemplated revision of rates, and so afford a sound commercial basis for the enquiry into the whole system of railway rates and charges which is now being undertaken. In fact, for purposes of comparison, which are now for the first time possible, we shall be working in the light of ascertained facts rather than in the darkness of ignorance.

It will eventually be possible also to see whether the results anticipated have been obtained or what effect the altered rates have actually had on a particular class of traffic.

Wagon-miles.—Wagon-miles afford a good index of the use made of the wagon stock available, as by dividing the wagon miles by the stock of wagons, the average miles run per wagon is ascertained. The average load per wagon, hitherto unascertainable, can also be deduced and, in addition, the average number of wagons on each train can be ascertained by dividing wagon miles by train miles. Arrangements have been made to obtain loaded and empty wagon miles separately. The relation between these two factors is an index of unremunerative mileage. Wagon miles per train engine hour are a guide whether freight traffic is being worked in an economical manner from a locomotive point of view.

Engine Hours.—These statistics show the number of hours engines were employed respectively on Coaching Trains, Freight Trains Shunting, etc., and are compiled to correspond with the Train Mileage Statistics. Many useful factors can be deduced from Train Hours when used in conjunction with other statistical units. For example, Ton Miles, Train Miles and Wagon Miles per engine hour are all useful indices of the economic use of locomotive stock. The need of Engine Hour Statistics had already been recognised and recently adopted on a number of the principal Railways,

but a more complete analysis of the figures has now been put into operation and the particulars will be obtained in respect of all Railways.

Engine Mileage.—The information available in respect of Train Miles has previously been confined to "Coaching", "Freight", "Shunting", and "Other Miles". The new statistics provide for the separation of the mileage incurred on week-days and Sundays, and for a further analysis of "Other Miles" to show separately "Assisting Miles required", "Assisting Miles not required (*i.e.*, Engines working home on trains, etc.), "Departmental Miles", and "Light Miles".

Apart from Engine Mileage none of the statistics now being rendered on a four weekly basis has been generally available, and none of them has been compiled except in isolated cases.

The statistics relating to the Principal Railways will be summarised by the Ministry of Transport and circulated to the General Managers of the Railway Companies concerned at the end of each four-weekly period, thus making the experience of each available to all. The principal units of efficiency will be made public, so that those interested in railway economics may intelligently follow the results obtained.

Other phases of Railway Working are being covered in a similar manner.

e) *Labour.*

Parallel with the financial difficulties was the problem of wages of railway servants, which had remained unsettled throughout the whole war and up to the establishment of the Ministry of Transport. Some general rise in wages was admittedly due at the beginning of the war, and the re-adjustments had only been postponed by granting a series of war bonuses, which by 1919 had reached a total of 33s. per week per man. Before, however, any settlement could be reached on a national basis, the numerous and intricate differences between the scales in force on the various Companies and in various parts of the country had to be cleared up. For instance, in Manchester the carters employed by seven different Railway Companies in the same area were in receipt of seven different rates of wages, and throughout all graduations of railway labour, differences existed which made general adjustments impossible.

The difficulties in negotiation culminating in the railway strike delayed the completion of a settlement, but the agreement finally reached will, it is hoped, form a permanent and lasting basis. Not only have all the principles regarding standardisation of wages been settled, but machinery has been devised which will enable any adjustments which may be required in the future in railway wages to be made apart from the ordinary administrative work of the Department.

The scheme consists of a Central Wages Board of five representatives of the Companies and five representatives of the men, to whom disputes will be referred. Should they be unable to reach an agreement reference will be made from them to the National Wages Board, consisting of four

Railway Managers, four Railway Workers, and four users of railways (one nominated by the Parliamentary Committee of the Trades Union Congress, one by the Co-operative Union, one by the Federation of British Industries, and one by the Associated Chambers of Commerce), with an independent Chairman appointed by the Government. It is agreed that no strike shall take place until one month after a reference has been made from the Central to the National Wages Board. Local machinery is also to be set up to deal with local matters.

This separation of discussions of wages from Departmental work and from the political chief of the Department should prove of the greatest value in the future, and a settlement of railway wages will form part of the general question of wage adjustments in essential occupations. In placing wage arrangements on a permanent basis the Ministry of Transport has cleared the way to a re-establishment of normal working conditions.

f) *Traffic Congestion.*

The congestion of the railways, involving, as it does, unaccustomed delays to traders, naturally engages public attention, but the difficulties with which the railways are steadily and successfully coping are still little appreciated. With a decreased number of locomotives and wagons in traffic, and with a shorter working day, the railways are actually coping with a larger volume of work than in 1913.

The total number of passengers carried by the 16 principal Railway Companies (exclusive of season ticket holders) during the year 1919 was 974,259,966; an increase of 156,278,127 passengers, or 19.1 per cent. as compared with the year 1913.

The number of season ticket holders, equated to annual tickets, conveyed during the year 1919 was 735,172; an increase of 245,692, or 50.2 per cent. as compared with the year 1913. These season ticket holders are responsible for from 100,000,000 to 150,000,000 additional journeys, so that the annual carriage of passengers is nearly 300,000,000 more than in 1913.

Freight Revenue on the Controlled Railways during the past year was nearly £ 5,000,000, or 7 per cent. more than in 1913, on the basis of the same charges and excluding Government traffic amounting to £ 21,000,000, of which probably about one-half was freight traffic.

The total freight receipts were therefore, approximately, 20 per cent. in excess of 1913. This indicates that, even after allowing for a change in the class of goods carried, the average distance traffic was conveyed has been increased, thus involving a greater tax upon the carrying capacity. To cope with this traffic the railways were, for the whole of 1919, working with a shortage of serviceable locomotives and wagons.

The stock of locomotives available for traffic on the 16 principal railways on the 30th June, 1919, was 17,743; a decrease of 1,186 as compared with the number available at the end of 1913; this decrease was reduced to 293 locomotives on 31st December, 1919, brought about by a deduction of 447 locomotives from the number under or awaiting repair,

429 locomotives lent by the Government, and 17 added to the Companies' stock.

Since the 31st December 22 additional Government locomotives have been hired to the railways, who are making strenuous efforts to reduce the number under and awaiting repair as quickly as possible, and to increase the rate of construction of new locomotives.

These 16 principal Companies in Great Britain had actually in traffic on the 30th June, 1919, 650,606 wagons, or 45,315 less than on the 31st December, 1913. By the 30th September this deficiency had been reduced to 43,486, and by the 31st December to 19,391. Considerable pressure had been put upon the railways to increase the construction of new wagons; on the 30th June, 1919, there were 17,141 wagons on order at Railway Companies' shops and 3,995 on order from outside firms, a total of 21,136. On 31st December these orders had increased to 21,306 at railway workshops and 11,542 from outside firms, making the total 32,848 wagons on order, or an increase of 11,712 wagons since June. During the present year additional orders have been authorised for the construction of 7,277 wagons by outside firms.

During the three months ended 30th November last the average number of new wagons put into traffic monthly was 888 (148 from outside firms) and during the last three months the average number has been 1,668 (277 from outside firms) a month, or nearly double.

Far more important than the actual wagon shortage have been the delays caused by the alteration in working hours, both on the railways and in other trades. Whereas before the war the working day of 11½ hours was available on railways for unloading wagons there is now the universal 8-hour day. The men are naturally reluctant to impair the advantages which they have gained by the establishment of this principle by any frequent resort to overtime.

During December 365,533 wagons days over and above the "free time" for loading and unloading were lost.

Equally important as contributing to the traffic congestion is the alteration in the flow of traffic. This change, which is common in the case of many commodities, is due to a variety of causes, the chief being the increased cost of sea traffic, which has thrown the coastal trade on to the railways.

The position is best illustrated by the case of coal. Before the war a very considerable proportion of Northumberland, Durham and South Wales coal was exported, and the country relied largely for its internal consumption upon Nottingham, Derbyshire and Warwickshire coalfields. Owing to the decrease in output from these fields much of the coal previously exported is now diverted to home consumption to make up the shortage. At the present time coal from Northumberland and Durham is being conveyed by rail to South London, and Monmouthshire coal is being carried across country to the Eastern Countries. During 1919 about two million tons of coal were conveyed by rail to London in excess of the amounts carried pre-war.

Another instance in this change of flow of traffic is afforded by the

ports. Owing to the greater excess of imports over exports in 1919 as compared with 1913 the traffic by rail from the ports is in excess of the traffic to the ports. This necessitates a large number of empty trucks being worked into the ports with a corresponding waste in loss of carrying capacity. The tonnage (excluding coal and coke) carried *from* Liverpool by rail in 1919 exceeded that in 1913 by 880,000 tons, or 26.26 per cent., necessitating the sending of about 176,000 additional empty wagons (or about 600 per working day) into Liverpool to move the increased import traffic.

The tonnage forwarded and received by rail (again excluding coal and coke) per the principal London Docks (Poplar, Victoria and Albert, Millwall, Tilbury, and East and West India Docks) during 1919 shows an increase of 120,000 tons over 1913. The tonnage received was greater by 50,000 tons, or 5.7 per cent., and the tonnage forwarded was up by 70,000 tons, or 5.0 per cent. This increase, on the basis of 5 tons per wagon, involved the handling of an average of 80 additional loaded wagons per working day as compared with the year 1913. The figures for these ports were taken out specially as being the greatest in the Kingdom and as two in which the greatest blame for congestion has been cast against the railway companies.

Congestion arising from many different causes is not susceptible of relief by any single remedy, and the Ministry has already put into force various general measures which are assisting the companies to continue and expedite the improvement already manifest.

As regards passenger traffic it is neither desirable nor possible to reduce the amount of traffic, which is one symptom of the increased spending power of many classes of the community. In view, however, of the situation the Minister concurs in the view of the companies that any restoration of special facilities such as week-end tickets or excursions cannot at present be re-introduced, since goods traffic must have preference until the congestion is relieved.

As regards the delays due to the detention of wagons, the Minister referred the matter to the Rates Advisory Committee, and on their advice raised the charges. The results of this change are already most satisfactory since the detention of wagons in February showed a decrease of 42 per cent. as compared with December, a saving of over 150,000 wagon days—a most remarkable result.

Assistance has already been given to the companies in unloading wagons by the provision of a large number of Government lorries, while it is hoped that the new rates without further increase will make it possible for traders to undertake their own cartage and thus decrease the effect of the 8-hour day in congesting the terminals.

To assist in the locomotive shortage all the locomotives in France were brought back as quickly as possible and distributed to the railways, and similarly in the case of wagons; in spite of great difficulties in the war area the return has been expedited, so that out of 29,376 railway-owned wagons in France at the Armistice, 16,868 have now been returned, and the remainder are being brought back at a rate of 460 per week.

In order to assist in the re-establishment of normal flow of traffic the subsidy on coastwise traffic has been continued, but until freights by sea fall to a level and until the normal trade balance of the country is restored traffic cannot return to its channels.

g) Development.

Attention is naturally concentrated at the moment on relieving the immediate congestion. It is the duty of the Ministry of Transport, however, to prepare a future policy which by progressive economies will decrease the burden of increased cost of transportation. A return to unlimited competition between competitive lines would be wasteful, and even before the war by pooling arrangements the various systems were eliminating direct competition between point and point.

In this connection it must be remembered that many facilities suspended during the war have not yet been restored, and the Development Department is constantly considering the public need for the reinstatement of such lines and services as were closed or curtailed during the war, and which, owing to financial considerations or scarcity of material, have not yet been restored. Many of these facilities served agricultural districts which, though productive before the war, have largely increased in productivity owing to the stimulus given to agriculture by the needs of the nation in the last five years. Apart from the actual traffic which would accrue from agriculture, there, is the further consideration that the facilities have in many cases led to a population settling down in the vicinity.

All such facilities cannot be reinstated at once, but it is the duty of the Ministry, acting in consultation with other Departments of State, to secure the restoration of these facilities in cases where they are urgently required in the interests of agriculture, industry, or public convenience, even though the particular branch in itself may not give immediate prospect of being a remunerative undertaking.

It is obvious that both agriculture and industry are likely to make increasing demands on the branch lines, and in many cases it will not be sufficient only to re-open branches which have been closed, but it will be necessary to extend them into new districts to serve new industries and new settlements of population.

In order to prevent overcrowding in the great cities, with consequent congestion of the traffic, the Ministry of Transport must take a far-sighted view of the problem of the urban worker, and in conjunction with the Ministry of Health it will be its duty to encourage self-contained industrial centres away from the large congested areas of our present large towns, primarily in areas where existing transportation facilities are able, without additional capital expenditure, to deal with the traffic. Although much can be done by the improvement of road services, the heavy passenger and goods traffic of a large industrial centre requires primarily railway facilities, which, however, should only be provided where it is certain that no alternative site already in possession of the necessary facilities exists.

h) *Standardisation.*

Great advantages can be secured by the standardisation of rolling stock and of loading gauge. At present there is no uniform design either for wagons or coaches, but each railway builds its rolling stock to meet its own particular requirements and in accordance with its traditions, with the result that no universal standardisation of component parts has been possible. This diversity causes very great inconvenience in effecting repairs of wagons which necessarily travel over lines distant from their home system; it is obviously wasteful and often results in long delays. The trouble is accentuated by the privately-owned wagons. These are bound to conform to general specifications prepared by the Railway Clearing House, but can, and do, vary greatly in their component parts, which ought to be interchangeable in the interests of railways and traders alike. It is obviously impossible for the railways to hold stocks of the parts suitable to all types of private wagons.

In considering the production of wagons too great stress has possibly been laid on the effect of the recent shortening of hours, and too little attention has been paid to improving methods of manufacture, which should be introduced to assist in making good any loss of output. Standardisation by reducing the number of types to be manufactured will help very largely, but following on the heels of standardisation must come the re-organisation and possible re-grouping of workshops.

In the case of passenger coaches the absence of standardisation precludes the use of some particularly modern and up-to-date stock in through running, owing to the diversity of the loading gauge of different systems. If the loading gauge could be increased wagons of a higher capacity could be employed, and it is universally recognised that for certain classes of traffic this would prove economical. Investigations are required as to the cost of such an improvement compared with the possible resulting economies; for it would involve an increase, in the carrying capacity of many existing bridges which could not bear the locomotives required for the heavier trains. Indeed, at the present time this very difficulty limits the use of locomotives built by the Government for use in the war areas.

For some time committees of the railways have been considering the questions of the standardisation of rolling stock and increase of the permissible loading gauge, but the war interrupted progress. Enquiries have been resumed and are in a sufficiently advanced stage to enable the commencement of provisional estimates as to the capital cost involved in reconstruction to suit the increased gauge. But before any conclusions can be reached, there must be a great amount of further research involving the highest technical engineering skill.

The best opportunity for pressing on with this investigation is the period of control, during which a considerable degree of unified working among the railways must of necessity continue.

i) Electrification.

The policy of the Ministry with regard to the electrification of railways is to encourage the different railway companies to spend their own capital on electrification schemes wherever a well-considered scheme can be produced, more especially with regard to suburban traffic. This has proved in different parts of this country to be eminently suitable for electrification, and creates additional traffic with greater rapidity, so that the return upon the capital expended is improved.

There are, however, important points of principle to be settled so that the various schemes which have been sent forward to the Ministry, both for suburban and for main-line railways, shall be so arranged as to facilitate the continuity of traffic and permit the rolling-stock of one company to go over the lines of all others. It is fortunate that up to the present very little has been done in this country which would interfere with the possibility of through running, as the necessary alterations, where differences do exist, can be made quite easily.

A Committee of well-known technical engineers and others is at present sitting to consider the technical points in connection with the interchange of electric rolling stock and to advise on any questions which may arise in respect of through running.

The importance of early electrification in and about our great towns becomes much greater when all the housing schemes which are projected are taken into consideration, as it seems necessary that if any new great house-building programme is devised for working classes, facilities should also be created for taking them to and from their work in the shortest possible time, and these facilities can in many cases be given on existing lines of railway, provided that they are electrified and that some system is evolved of co-operation between the different Companies who may be interested in the local lines in the immediate vicinity of the large city.

ANNEX III

Statement presented to Parliament as to the Financial Situation of British Railways during the period of the Government Control of Railways (1914-1918) as compared with the situation in 1913.

	Year 1913	Period of Government Control.				
		Period 5th August to 31st Dec., 1914.	Year 1915.	Year 1916.	Year 1917.	Year 1918.
	£.	£	£	£	£	£
RECEIPTS—						
Passenger Train Traffic	54,096,074	19,091,103	52,576,836	54,953,831	59,710,183	69,819,265
Goods Train Traffic	68,551,503	26,861,560	71,754,353	74,809,650	74,310,568	72,396,409
Estimated Amounts which would have been received for Government Traffic if charged for at pre-war authorised rates	—	3,500,000	10,279,104	20,649,126	35,698,554	41,917,024
TOTAL	122,647,577	49,452,663	134,610,293	150,412,607	169,719,305	184,132,698
Less—Expenses of Collection and De- livery	5,092,670	1,950,817	5,341,872	5,711,354	6,571,736	7,845,927
TOTAL TRAFFIC REVENUE EARNED	117,554,907	47,501,846	129,268,421	144,701,253	163,147,569	176,286,771
Mileage, Demurrage and Wagon Hire	150,679	1,719	9,844	9,115	4,958	—
Miscellaneous	995,349	414,623	1,079,779	1,160,717	1,126,903	1,297,550
TOTAL REVENUE EARNED	118,700,935	47,918,188	130,358,044	145,871,085	164,279,430	177,584,321

EXPENDITURE—

Maintenance and Renewal of Way and Works	11,818,310	4,623,713	11,598,234	11,924,459	13,265,610	16,145,166
Maintenance and Renewal of Way and Works; Arrears to be carried out	—	800,264	2,984,757	5,055,609	6,282,179	6,485,228
Maintenance and Renewal of Rolling Stock	13,257,617	5,493,599	13,741,171	15,211,621	17,620,905	21,888,238
Maintenance and Renewal of Rolling Stock; Arrears to be carried out....	—	315,446	2,476,753	3,202,694	3,667,993	3,327,049
Locomotive Running Expenses	17,130,661	6,918,659	19,195,992	22,604,085	24,742,848	29,973,666
Traffic Expenses	23,260,765	9,405,579	24,739,143	27,397,967	32,772,823	41,621,685
General Charges	2,598,209	1,094,918	2,635,550	2,992,066	2,885,972	3,140,849
Law Charges and Parliamentary Expenses	226,346	89,039	197,250	186,802	176,517	185,812
Compensation (Accidents and Losses)	1,158,451	293,760	1,176,858	1,250,914	1,275,191	1,456,430
Rates, Taxes, &c.	4,705,264	2,077,111	5,064,047	4,839,699	4,880,778	5,273,155
Government Duty	284,361	81,101	255,341	293,174	—	—
Payments under National Insurance Act, 1911	398,870	155,192	363,652	354,126	362,339	355,496
Running Powers	108,699	811	3,274	3,806	1,200	1,665
Mileage, Demurrage and Wagon Hire	239,916	28,126	51,136	45,961	63,942	165,745
Miscellaneous	157,139	74,722	190,639	207,596	252,789	340,392
Allowances to dependants of men serving with H.M. Forces	—	141,683	333,225	477,425	623,395	711,009
Watching, Patrolling, &c.	—	190,731	21,240	8,702	5,860	7,127
Payments to Staff—Armistice Day...	—	—	—	—	—	250,913
TOTAL EXPENDITURE	75,127,210	31,782,832	85,028,262	95,756,706	108,877,932	131,326,295
BALANCE OF REVENUE EARNED OVER EXPENDITURE	43,573,725	16,135,356	45,329,782	50,114,379	55,401,498	46,258,026

REMARKS ON PRECEDING TABLE.

Compensation payable to Railway Companies.—The sum receivable per annum by the Railway Companies as compensation during the period of Government Control is limited to the Net Receipts of the year 1913 with the addition of 4 per cent. upon Capital Expenditure brought into use since the beginning of that year.

Audit.—The accounts from which the figures are taken have been audited on behalf of the Government up to the close of 1916 and the greater part of them for 1917. The remainder of the figures are taken either from accounts in process of audit or from preliminary returns.

Subsidiary Undertakings.—The value of the services rendered without charge to His Majesty's Government by means of Steamboats, Docks, Canals, &c., is not ascertainable, and the results of these subsidiary undertakings are accordingly omitted. It is not likely, that, if available, they would materially affect the figures.

Government Traffic.—This is the value of the traffic carried for the Government without charge under the compensation arrangements, calculated at pre-war authorised rates. The figure for 1914 is estimated.

Wages.—The Wages included in the several heads of expenditure are taken at the actual rates paid, rising in 1918 from 21s. per week to 33s. above the rates in force in 1913. If the rates paid at the close of 1918 had been in force throughout the year, it is estimated that an additional cost of about £10,000,000 would have been incurred.

Arrears of Maintenance.—The cost of making good maintenance in arrear is calculated on the basis of the expenditure in 1913 increased by 75 per cent. to allow for higher rates of wages and prices of materials.

Extra Wear and Tear.—The Net Receipts are subject to provision for extra Wear and Tear arising from additional Traffic carried. The cost of eventually making good this Wear and Tear must be considerable, but cannot be estimated at present with any degree of accuracy. A calculation based on the ratio of Maintenance outlay to Receipts in 1913, after allowing for increased wages and cost of materials, results in a figure of about £40,000,000 during the period of control. There are factors affecting this estimate which tend to reduce it; but whatever their effect, there is no doubt that a large allowance for this contingency needs to be provided for.

ANNEX IV

Statement made to certain Members of Parliament with regard to Questions of Transport by Sir Eric Geddes.

Gentlemen,

I wish to thank you for coming to this meeting and thus giving me an opportunity of making a statement on the railway question and, more particularly, on the freight side of it. I have not prepared anything on the passenger side, which is also of great importance and of great interest, but your response to my invitation has so encouraged me that I may at a later date ask you to see me about the passenger side. I think it will be convenient if I make my statement first on the freight side of the transportation problem dealing with congestion and the present alleged wagon shortage. The causes of congestion to-day are numerous, but as I think I will show before I sit down, the shortage of wagons, that is to say, the actual shortage of wagons, is not the principal cause of the difficulty. I would like you to examine the question, not in a sensational way, but, as the House of Commons always does when it settles down to a thing, in a business-like way. I think that probably one of the greatest dangers of great State control or nationalisation of railways would be that we would be inclined to legislate in their administration in a sensational and panicky way. I am trying not to do that.

Control of Railways.

First of all I would like to explain to the meeting how the management of railways, which has been called control, has operated during the war and how it will operate now, or rather at the end of the year. During the war, the railways were under the control of the Government, but, in fact, they were self controlled, because the machinery through which the Government exercised its power was placed in the hands of twelve General Managers of the Companies, and I think that Sir Herbert Walker, who was Chairman of that Executive Committee, will bear me out when I say that, practically during the war, they never received any direction as to the working of the railways. They gave directions under the powers delegated to them. They exercised three quite distinct functions. The first of those was Government control, which in its exercise really came to this, that twelve of the principal General Managers were given powers to give instructions, not only to their own Companies, which enabled more effective and prompt steps to be taken to meet the situation, but they never really got any direction from the Board of Trade in these matters. The second of their duties was to exercise the functions

of a watch-dog over finance for the Government. By sending out their accountants, they audited the accounts of each other so far as the Government was concerned. That was done at a great saving of expense to the Government, and very ably and accurately done. Then they acted in another capacity, as negotiators between the railway companies and the Government. They acted as managers of their own systems and gave directions to the smaller systems. They were also a bureau of information for all questions of railway traffic relating to the war, running from the biggest questions, such as the conveyance of munitions and other heavy traffic, down to the taking of sleeping-car berths, or arranging for them.

From 1st January the control, in so far as it exists, will be exercised by the Ministry of Transport, and the financial check which has been so ably and conscientiously carried out by the companies on each other on behalf of the Government during the war, will naturally, and I think necessarily, be now to a greater extent supervised by the Ministry of Transport in its finance office. It is only fair to the railways that they should be relieved of that great responsibility. Then the negotiations between the railways and the Government as to the future or as to the present financial arrangements will be conducted between the Ministry and a Committee of the Railway Companies Association. That was a function which the General Managers performed at the outbreak of war and during the war, and the Railway Companies Association are now taking it in their hands. The Association will work through a Committee. The third item, which was the management of the systems, goes back to the General Managers through their old railway machinery. They worked together and managed, to a certain extent, together, during the war, and now that body which did the joint management ceases to exist about 1st January, and their functions as a Railway Enquiry Bureau will also cease, so that really instead of, as some people think, there being greater increased detailed control, the arrangement from 1st January will work out that there shall be a large de-control of a centralised kind, and the railways will, to a greater extent at any rate than during the war, be conducted under their own management, and I hope that all my honourable friends will assist both me and the railways in this connection.

Wagons.

One honourable member came to see me the other day with the Secretary of a very important Chamber of Commerce about the shortage of wagons in a certain district. I asked him if the complaint had been made to the railway companies. He said, "No; we understood that the work was done now from Whitehall." That would be quite impossible, and it would be madness to try to do it. I am, of course, always glad to enquire into points when they are put to me or to answer questions which are raised, but those are really matters which, as under the old management of the railways, are best dealt with under the management as it will exist after 1st January, and in the first case by the trader communicating direct to the railway concerned. I think that will be most effective, and if you could influence your constituents in that direction it would

certainly ease the work of the railways in having to answer questions over the telephone or by telegram from here. At the same time, I may say, I am glad to make those enquiries for honourable members at any time.

The powers which have been bestowed by Parliament on the Ministry of Transport of course remain, but, in so far as I can at present see, there is no immediate likelihood of those powers being exercised except in so far as it is necessary to safeguard the financial transactions as between the railways and the State. Honourable members will readily understand that as at the present time the State is paying, in fact, the revenue expenditure of railways, it is very important, from the point of view of the State, and satisfactory to the railway companies themselves, that the State as well as the railway companies should carefully scrutinise whether the expenditure is capital or revenue expenditure. If it is revenue expenditure it falls to be paid by the State under the guarantee. If it is capital expenditure, it falls to be paid by the companies, and, as we all know, on some occasions it is difficult to draw the line. It is most important that we should extend during the period of control scrutiny of the accounts which the railway companies compiled, and upon which they get their guarantee, or which affect the State's liability to pay the guarantee. Again, under the abnormal conditions under which we now are, the State must, during the period of control, take a very large part in wages questions and in rates and fares. As regards the wages question, when the present negotiations are over, and I hope they will be over very soon, we will have provided machinery which I explained in the House the other day, and which I trust will take the settlement of railway wages and conditions out of the direct hands of the Minister. There will be a body composed of three parties with an independent chairman. You will have the railways on one side, the men on the other, with the users as the third party, and they will pronounce upon questions of railway wages and, as I say and hope, take that rather difficult task out of the hands of the Parliamentary Minister, which I think is quite the wrong place for such matters to be dealt with.

Having explained that, I would like to pass to the wagon position, which undoubtedly is the point in the question of the congestion on the railways which has caused most interest. At the present time, the United Kingdom, that is, England, Scotland, Wales and Ireland, has railway-owned wagons 1,000 in excess of what they owned in 1914—that is, the ownership for the United Kingdom. In Great Britain alone, leaving out Ireland now, the actual available rolling stock, that is to say, the rolling stock in traffic, is 5 per cent. down; that is, the whole of the United Kingdom to-day owns 1,000 more railway-owned wagons than in 1914, and, incidentally, the carrying capacity will be actually higher than is represented by 1,000 in numbers, because new wagons are replacing wagons of lower capacity. Great Britain itself, as opposed to the United Kingdom, is 5 per cent. down, and the traffic passing to-day in tonnage in Great Britain is 14 per cent. down.

Mr. Houston: Can you give us the total numbers?

Sir E. Geddes : I have not got them at the moment, but I can let you have them later. Roughly speaking, there are 700,000 railway-owned wagons, and 5 per cent. down is 35,000, and these are to-day between from 15,000 to 18,000 wagons in France belonging to British railways, and there is awaiting repair another 15,000 to 18,000 in excess of the normal number awaiting repair, so that we have there roughly 35,000 wagons out of traffic. The classes vary. It may be asked, why could you carry the heavy war traffic and you have got this shortage of wagons now? Certain honourable members have brought to my notice cases, to which I shall refer later, of ship-building traffic that is held up. The reason for that is this, that during the war there was very little long traffic and far more short traffic. It was heavy stuff, such as builders' materials, ingots, shells and things of that kind, which could be carried in ordinary wagons. Replacement during the war was therefore very largely in ordinary wagons, while now bolsters and special wagons are more largely required, and that accounts for some of the difficulty where a special class of wagon is wanted.

Apart from the numbers of the wagons, we have got a very abnormal state of affairs in the traffic. Take Welsh coal, for instance. It used to go in Wales mainly from north to south, and now it goes from west to east. In 1917, 61 per cent. of anthracite went for shipment with an average lead of 23 miles, and 39 per cent. went inland. In 1919, 60.5 per cent. went inland with an average lead of 200 miles and 39 per cent. shipment. I got other figures taken out on one railway as an example, and I believe it is a fair example, and they say from their figures that the average length of lead is up 33 per cent., and that is not from the Welsh coalfields. Reports from other railways indicate the same thing, but I have not got the final figures, as it is not an easy matter to have them taken out. That increase is largely due to the fact that the coastal tonnage is so much down. You get many other cases, such as Durham and Northumberland coal, which used to be coastwise and now comes to London by rail. That is partly due, as honourable members know, to the fictitiously low railway rate. Railway rates, as we all know, are subsidised rates. As soon as you get those rates up, and no time has been lost, or is being lost, in dealing with that question, you will get a very much easier situation in many ways, as I hope to explain before I sit down. It does not pay even with the limited subsidy which is being given to coastal shipping for shipowners to use their ships in competition with the railway rates. Apart from subsidy the only other possible way I know of, of dealing with the coastal shipping shortage, would have been to take further control of the shipping, but everybody wants to get rid of control, and I know of no other way in which this could have been dealt with. The subsidy, a very limited one, which was put on before I became Minister, was put on in such a way that it would give relief, and it has given great relief, and so that it would not involve a great deal of the tonnage. That subsidy will come to an end as soon as we get the railway rates on to an economic basis. I hope that will be before 15th January. The Committee which was set up under

the authority of the Act has been working assiduously and continuously at it. There is another abnormal feature which has affected the railway situation a great deal, and that is this—owing to finance, owing to difficulties of supplies, owing to uncertainties in business and different reasons, which honourable members will be able to name for themselves, traders are not consigning traffic in the same size as they used. On one railway, which is given to me by the Railway Executive Committee as a reasonable fair sample, the tonnage is down 62,000 tons in one month, or 2 per cent., and the number of separate consignments is up 550,000, or 24 per cent. more separate consignments. That means a light load, and you cannot get the same work out of your wagon if you are dealing in small parcels like that.

As to the actual wagon shortage, there are 18,000 wagons, roughly, in France—there may be less now—and those are coming back at the rate of 600 per week. The Secretary of State for War has a plan, and I have gone into it carefully with him, of getting that up to 900 per week. They bring them back on the train ferries, running to Richborough. All those wagons need repair, and repairs are rather the bottle-neck, so that a wagon back from France does not mean a wagon in traffic immediately. During the war the building of wagons was very largely stopped.

The capacity in this country belonging to the railway companies for building was 25,000 wagons per year, working single shift. In the first half of this year the railway shops built at the rate of 10,000 wagons per annum, which is not half of 25,000. I do not think it is very wonderful that they did not do more when you think of the conditions that all manufacturers have been going through since the beginning of the year. They have had dislocation due to labour troubles and difficulties in getting material, and what applies to other manufacturers applies just the same to railways. Notwithstanding those difficulties, their output was at the rate of 10,000 per annum, and, apart from that they concentrated on repairs. Obviously, you can improve the present situation better by concentrating on repairs than on building new wagons. Therefore I am very glad there has been a steady and satisfactory improvement in this direction, and as to that I will give the figures later on. Since June orders have been placed for 22,000 more wagons. That includes 5,400 to outside firms, and I will refer later to the point of outside builders. I would like to say these are by no means all the orders railways are ready to place. There are awaiting for outside builders outstanding orders for 5,100, and if we can get them placed no one will be better pleased than the railway companies. The companies have got ample financial reserves to build wagons. There is absolutely no restraint on them as to building. They are being urged, if, indeed, urging is necessary, to build or to get them built. It is undoubtedly to the companies' interest to build now during the period of Government control. There is no financial restraint, and they are not held back by any uncertainty as to what is going to happen. Under the Ministry of Transport Act there is no reason why we should not place very much larger orders for wagons, in so far as the finances between the country and the railway companies are concerned. I wanted to make that clear, because I have seen it stated on

the authority of certain directors that the Ministry had held them back. I can state most definitely it cannot hold them back under the arrangements. What is holding them back is this : the prices that are being asked are enormous.

Sensational and Panicky Action.

Here I wish to remind the meeting of what I said about sensational and panicky action. The prices that are being asked are enormous. Wherever dates are given they are so safeguarded that there is not the least prospect of holding contractors to the date of delivery, or else they say it is impossible to give a date at all. Just to show what these prices are running to—and I wish particularly to make this point clear—a 12-ton wagon to-day is being quoted for uncertain date, and there is no object in getting wagons if you do not know that you are going to get them soon, at from £ 350 to £ 400, which is from £ 100 to £ 150 over the present-day railway price of building the wagon. Even Woolwich Arsenal, which never built wagons before, and which is a State-run factory, with very little room for this class of work, is building that wagon, despite all the disadvantages it is suffering from, for £ 297, as against from £ 360 to £ 395 quoted.

Mr. Houston : Is it pre-war price ?

Sir E. Geddes : The Woolwich price is £ 297 against from £ 360 to £ 395.

Mr. Nelson : Does that include maintenance charges ?

Sir E. Geddes : Yes, all the Woolwich charges include maintenance.

Mr. Nelson : Has Woolwich delivered any ?

Sir E. Geddes : They are a bit held up by the moulders' strike.

Mr. Nelson : How can they tell the cost, then ?

Sir E. Geddes : They have got it nearly completed, and they are able to work out the cost. In order to be quite sure that one has not got unfair figures, I would like to quote these : Here is a railway 16-ton mineral wagon and the price quoted £ 278, and the present-day cost of building it in the railway company's own shops is £ 200. Then a 10-ton wagon, price quoted and orders placed at £ 270, and the present-day railway company's shops cost £ 180. A 20-ton steel wagon, price outside £ 359, and present-day railway cost £ 270. A 20-ton goods brake van, price outside £ 965, present day railway cost £ 680, and the pre-war cost of it was £ 270. Another railway covered goods wagon, for which orders have been placed, £ 302 outside, and railway shops cost £ 255.

General Sir O. Philipps : Can you give us the cost of the 12-ton wagon before the war ?

Sir E. Geddes : I will try and do so later. Another wagon, £ 415 outside price, as against present-day railway cost of £ 335. Another covered wagon

from another firm, £ 328 outside price and railway company costs £ 255. From another wagon-building firm £ 290 quoted, and railway costs £ 255. Another 12-ton open goods wagon, building at Woolwich Arsenal, £ 297, and present-day railway costs £ 225 (£ 242 including all overhead charges), and outside cost £ 360 to £ 395, and the pre-war cost £ 90 (£ 103 including all overhead charges). Another case, railway fish vans £ 1,090 quoted and ordered, and the railway's own cost £ 353. Another outside firm quoted for covered goods vans £ 325, and the present-day cost in the railways' own shops £ 166. A 10-ton standard wagon outside cost £ 283, and railway cost £ 228.

Mr. Terrell : Can you state what is the rate of overhead charges the railways put on their costs, or what is called their cost, because I have seen figures where railway companies simply put on a nominal amount for overhead charges, such as 50 per cent. on labour, or 25 per cent. when their overhead charges properly worked out come to from 100 to 150 per cent. added together ?

Sir E. Geddes : I will endeavour to do so.

Brigadier-General Hickman : What sort of price are they putting on the timber ? Is it pre-war ?

Sir E. Geddes : Replacement value.

Sir E. Jones : Are they different contractors ?

Sir E. Geddes : All different names I have been quoting.

Brigadier-General Hickman : Would it not make a great difference if the railways had enormous stocks of timber, instead of having to buy at present prices ?

Sir E. Geddes : The railways charge replacement values. They are bound to do that, because the Government has to pay for replacement. They would not put this in at a pre-war price in their own interests. Now, gentlemen, the way I look at this question is this. I do not believe when we have got the wagons over from France, and when we have overtaken repairs, and with the improved working of a more unified system of railways as was initiated during the war and will be carried on now, that we are in such desperate straits as that we have got to pay anything like these prices. If we do, we are going to load the railways of the country, which in this sense are not companies' lines, with a charge which the State has got to pay. I do not see why we need consider the position so desperate that we have got to pay prices like those. I am looking at the cost of the wagons ordered, whether railway-shop built or outside built, and the price is enormous. I believe when trade settles down, and it is settling down, and conditions are undoubtedly improving, and when we get all the wagons we own into running, and when we get the other measures of adjustment which I am going to explain later, that we do not require to pay these prices. I have said that we are ready to place orders now for 5,000 more wagons outside, and more on top of that, if we can get them at a rea-

sonable price, with a reasonable chance of delivery, and if any honourable member knows of any wagon works which will take orders.—

Brigadier-General Hickman: What do you call reasonable prices?

Mr. Nelson: Are the railways prepared to compare their cost with that of private companies?

Sir E. Geddes: Most certainly they are prepared.

Mr. Nelson: I should say that the private firms would be only too glad of the opportunity.

Sir E. Geddes: I do not wish to accuse the wagon builders of anything unpatriotic, but the wagon-building trade is getting on very nicely. In October the exports of wagon parts from this country were £ 387,000, and in November they were £ 542,000. For the eleven months of this year they have been £ 2,000,000, so that last month one-fourth of the whole year's export by the wagon-building firms went abroad. That is a good thing; it is good business. It will improve the exchange and bring money into the country. We do not want to stop that, and there would be an outcry if we did. Therefore, I have to ask myself, and I have to put it to the meeting, if on the figures which I have given there is, as I believe there is, a reasonable justification for thinking that we can carry the traffic of this country if we get the whole of the rolling-stock into commission again—and it will come into commission far more quickly than we can build—would I be justified then in paying the very high prices of to-day for a very large number of wagons, when I believe that we can do without them, and would I be justified in coming to the House and asking for power to control or interfere with the ordinary development of the trade of the wagon-building firms? I believe that we can carry on, and I do not think that we should pay the high prices which are asked for the rolling-stock. I believe that it would be a quicker way to get the railways back to the full carrying capacity by concentrating on repairs.

Repairs.

Now, as to repairs. When I was talking about the number of wagons coming over from France you will recollect that I said they might come over very soon at the of 900 a week. They practically all want repair and small alterations, but repair is the bottle-neck. We could, if we wished, turn shipping or something else on in order to get those wagons, and if by doing that we could get any immediate benefit from it, I would not hesitate for a moment to arrange with the Ministry of Shipping, but I do not see any immediate benefit in it. The repair capacity of the railway shops in this country is equal to a million wagons per year. During the first half they did not build up to half their capacity, but during the first half they repaired in excess of their repairs' capacity, having borrowed from their building capacity, and in September they were repairing weekly

at the rate of 26,000 to 27,000 wagons a week, and they were marking off for repairs 24,000 wagons a week. That means that they are gaining at the rate of nearly 3,000 wagons a week. That means a rate of repair, as against a capacity of a million a year, of roughly 1,400,000. So, in repairs the railways are doing extraordinarily well. They are pushing repairs in every way; they are giving precedence to repairs. I believe that repairs can be expedited, and they are in the way of being expedited, and the position is improving week by week, and I believe that this is the quickest and cheapest way to get the thing right. In addition, they have placed outside for repairs 11,000. It is not a big thing when you are doing 24,000 a week, but it is quite a big thing when you are trying to wipe out a deficit of 33,000. The deficit is going, but we have this complication: that it was undoubtedly an effect of the greater common use of rolling stock on any line that repairs have gone up enormously. That is due the fact that when a wagon gets out of repair on a foreign line it is not anybody's interest to get it into repair at once, and they have not got the spare parts.

Privately-Owned Wagons.

I now come to privately-owned wagons. There I agree that you cannot expect the private wagon owner to build with the possibility of his wagons being required hanging over his head when it is specifically provided in the Act, as I think we all agreed was prudent at the time, that the cost of a wagon—a new wagon—should not be exclusive proof of the value of it. Naturally, the private builder is not inclined to put his money into building wagons in these circumstances, but I hope to get over that by announcing very shortly that any private builder wishing to build, if he will consult with us, and we agree jointly as to the terms and specification of the wagons, we will agree to take that as the basis of acquisition. We think that that will help a great many private owners in their uncertainty if there is agreement as to the basis of the price of acquisition. We think that this will relieve the position which exists at present when no private owner is prepared to pay anything like the price that is being asked.

On the part of private wagon owners I am told that some private owners will not repair wagons, because they do not know what is going to happen. I cannot understand any man, if he has got some property which may be acquired on a valuation, letting it become derelict rather than make any repairs. Remember we have got, roughly speaking, to find something like 50,000 new wagons a year. Roughly 25,000 a year to replace obsolescence in the railway rolling stock, and 25,000 a year to replace obsolescence in the private owner stock. If we have to do that and we decide that we ought not to interfere with the private wagon builders, either to restrict their export trade so as to force the wagons into the hands of the railways, or to control the price—and I do not think that anyone here would advocate any such decision if we can avoid it—then we have another alternative, *to do what we did in munitions works*. Wagon-building, once you have the parts, is not a very difficult thing. We have

had wagons completed by unskilled labour in France, at prices which would compare favourably with those of any erecting shop in this country, and we are ready to undertake to set up wagon erecting shops, and I think that is probably the best thing to do. The wagon builders know their own business perfectly well. If they prefer to make these high profits now—and I think they must be high profits—and export their output, the country must take such steps as seem fit to provide for further accretions of wagons. While I say that I believe at the present time we can carry the traffic, I am perfectly clear that we should be criminally negligent if we did not provide for further wagons for the next 18 months or two years ahead. I do not think the position is so desperate that we need pay such high prices now. I believe that we can erect wagons by turning into shops Government factories which are suitable. It can be done, as we proved in France, by demobilised soldiers. At present we have a difficulty with the trade unions, but the Minister of Labour is dealing with that, and I think that very shortly we shall be in a position to say that we can undertake that work, and I think we can do it at a price which can compare favourably with anything quoted to us, and that would avoid any interference with the wagon builders. Legitimate builders will be open to quote against these concerns if they wish. I hope that we shall get a settlement on that before Christmas, and then I think we shall be able to go ahead without very great delay.

That is what I have to say about the wagon position. I do not think that it is so desperate. We shall get the wagons all right without having to pay these high prices and burden the transportation of the country, because it does not matter whether they are privately owned or State owned. The country will have to pay in higher freight rates, and we ought not to burden the capital of the companies with these enormous increases due to the high prices at the present time, because I do not think that it is necessary. If I was not sure that we could get along reasonably on the terms which I have explained, then I would not hesitate to say we have got to spend the money because we have got to spend what is necessary to avoid being throttled, if we are going to be throttled, but I do not think that we are going to be throttled.

Traffic Delay.

You may naturally ask, if the wagons are only down 5 per cent. and the traffic is down 14 per cent., why should there be this congestion? In the first place, there is a great increase in long loads. There is a great increase in the number of light loads. Those two things will readjust themselves in time, and are steadily readjusting themselves now. In the next place, there is a great detention of wagons. That detention has got the name which none of us who have been in trade like to hear: demurrage. It withdraws wagons from carrying, it congests the terminals, it causes a great deal of extra expense, and it makes bad and late runnings. Those detentions have increased vastly and are growing still at a very alarming rate. I would like to give figures, because this is one of the principal points in reference to the wagon shortage. During

September the number of wagon days lost by detention of publicly owned wagons over the free time was 340,000 days. That means that during the month the traders of the country commandeered half the rolling stock of the country for a whole day. That is excess detention over the free time.

Sir E. Jones: Is it not a fact that the railway companies will not clear the wagons?

Sir E. Geddes: This is detention.

Mr. Remer: It is all the fault of the railway companies. They do not put them in sidings very often.

Sir E. Geddes: That may be in some cases, but these returns are not very far wrong. In September there were 18,200 wagons detained over seven days above free time. On the average those wagons were detained 10 $\frac{1}{2}$ days above free time. That is a big leakage of rolling stock every bit as serious as the repairs.

Mr. Houston: Have you increased the demurrage charge?

Sir E. Geddes: Not yet. On the whole estimate there is an increase of 36 per cent. in the detention of wagons over the free time. That is, of course, an estimate. It is rather difficult to check it conclusively. I have got out the figures which compare the position with the period September, 1913, to August, 1914. The average demurrage per month then was £12,000 at the same rates, and for the period January to June, 1919, the average demurrage per month was £31,000. So you get an increase at the same rate from £12,000 to £31,000 per month. Owing to an alteration in part of the free time the figures are not absolutely accurate, but they are a definite proof of the statement which I make.

I admit that traders have many difficulties also. They have got the eight-hour day. That is a great difficulty; it dislocates their work. Railways have got it too, and it dislocates their work. Detention has taken place both in railway stations and in private yards. They have got changes in output and labour conditions. Their storage capacity is blocked. All those things militate against them in handling rolling stock. Owing to congestion the railways are not lifting the rolling stock as in other circumstances they would do, but still the fact is that a great deal of the deficiency in wagons is due to detention at the terminals. I have referred the demurrage charges to the Rates Advisory Committee. They are considering the matter at present. Their view, so far as I could gather it, is that from the point of view of the benefit to the trader who keeps the wagon, in some case the selfish trader and in some cases not, and from the point of view of the value of the wagon, the demurrage charge can justifiably be raised materially with benefit to the country.

Brigadier-General Croft: Progressively on time.

Sir E. Geddes: I have not got their recommendations. The present rate is far too low. The same thing applies to the detention of private wagons. So far as I am concerned it makes no difference which wagon

it is. We can check the private wagon detention by the amount of siding rent charged, and the private wagons are detained to the same extent.

Position on North-Eastern Railway.

There were two points raised by the honourable member for Middlesbrough to which I will refer, because it was largely owing to questions put by him and one or two of his friends that I have invited you to honour me by coming here to-day. The point which he put was that the shipbuilding yards on the Tyne and the steel works on the Tees were being held up for want of wagons. I have got figures from the North-Eastern Railway Company. It is bolster-stock that is used for carrying the long bars of material, and that company only sent 50 of these bolster wagons overseas. I think they have got them back, but these are only a small part of their total stock. During the war they did not build these wagons at all. They have now given priority to the building of 780 new bolster wagons, and they have borrowed 350 from other railways. I do not think that Middlesbrough district has really done so badly, because in October, 1919, they were forwarding an average of finished products of 1,667 wagons per day. That is only 10 per cent. below the boom period of 1913, and this period in October has included in it the whole of the dislocation caused by the railway strike. But there were three firms mentioned whose cases I would like to quote because they rather proved what I was saying just now as to the detention of wagons. Dorman, Long & Co., in 1914, had an average demurrage monthly of £ 18. Now it is £ 150. The Cargo Fleet Company in 1914 had an average of £ 5 10s. Now it is £ 120. The Consett Co. had an average of £ 6 10s. Now it is £ 73.

Mr. A. Williams: The Consett Co. say expressly that there is no substantial increase, and that it is due to a change in the system of charges.

Sir E. Geddes: Those are adjusted charges.

Mr. Thomson: We say exactly the same.

Sir E. Geddes: If there are any particular members interested in this, the best thing would be for them to favour me with particulars, and we will go into the figures.

Mr. Remer: Is it not the fact that the provision of additional wagons on the North-Eastern Railway is causing a great deal of dislocation in other districts, particularly on the Cambrian system?

Ports (Congestion).

Sir E. Geddes: I have not heard that. A great deal has been said about the congestion of ports, and the situation is certainly very difficult. At certain ports it is improving gradually, and at other ports it is going more slowly. Generally speaking, the ports where they are going slowly

are the ports that used to do a lot of overside working, that is, loading into lighters.

Mr. Houston : It does not apply to Liverpool.

Sir E. Geddes : Liverpool is improving very much.

Mr. Houston : I am sorry to have to contradict that.

Sir E. Geddes : It was very much better, though it may be bad again. Hull is the place I am thinking of. Overside working has got bad, as these lighters are used very largely for the storage of the valuable stock in Hull. One honourable member wrote a letter to the papers the other day on the subject. The same difficulty is affecting the canal traffic. Lighters are fewer in number. They are hampered with the eight-hour day working, and they are being used for storage. They can earn quite as much lying at the corner of the dock full of goods. Unless those lighters are released it is quite impossible for the railway company to take the load which the coastal steamers used to take, and until we get those factors right there is no use in saying that the whole situation turns on the shortage of wagons.

Another reason for detaining wagons is the shortage of cartage. Railway cartage is subsidised cartage to-day. It is difficult to get figures. There is a great deal of congestion. One cause why the private carter is not coming in is that he cannot come in until the rates are raised. The cost of horse cartage has gone up from 100 per cent. to 150 per cent., and we cannot improve until the Railway Rates Committee have reported. That Committee is working very assiduously, and as soon as railway rates are readjusted on an economic level the cartage position will improve. The same thing will apply to the canals to a great extent, though not completely, and the same thing applies to shipping. Therefore what I would like to put before the meeting is this: that while undoubtedly trade conditions to-day are hampered by the dislocation of the transportation system of the country, it is not only the railways, but it is the canals and the coastal shipping, and it must be remembered that the coastal steamers are privately owned. We have gone as expeditiously as we can to get the report of the Rates Committee, and that will put the cartage right. Meantime over 1,300 motor lorries have been lent to the railway companies and 500 to the ports to help to clear the congestion. The railway companies have asked for some more, and if we can get them they shall have them. When we get the railway rates generally on an economic basis, the cartage position will improve. The demurrage position will improve as soon as proper demurrage charges are imposed. Building is now going on to an increasing extent. Repairs are going on to an increasing extent. We are overtaking the arrears, and I submit that there is no reason to rush into giving large orders for wagons which we may not get in the immediate future. I believe that the policy which we are pursuing is the best, having regard to the necessity for economy, and not over-weighting the capital, and I believe that it is the most effective. It will take time, but I believe the position is steadily improving every day.

Appeal to Members of Parliament.

I would ask my colleagues in the House to help me as far as they can by impressing upon their constituents, traders and others, that it is really to the interest of the country to prevent forcing the State—because it is the State—buying enormous numbers of wagons now when we really can do without it. If everybody will put his back into turning the wagons round, then they can help a great deal if they will tell the people in the country that the railway companies are not free from difficulties, that they have their own difficulties. If honourable members will help me with their constituents to get them to realise that a wagon standing is actually transportation lost, and to get them to move in the matter, it will be of great advantage to us. You will all agree that our railways have done magnificently during the war. They are under the same management to-day. There is not one of the belligerent countries—and I have made it my business to inquire—whose railways are regaining their ordinary position with regard to traffic with less dislocation than this country. I know when one comes to the House of Commons, away from the hectic shriekings of the Press, one gets a cooler judgment of what he should do. It cannot help if the men to whom we owe a great deal for what they did on the railways during the war feel that they are condemned now when they are really pulling things out of a bad position. They are pulling things out; the position is steadily improving, and I do not think it will be very many months before the improvement is felt, especially if we get the help of the traders.

Mr. Terrell: The figures which you have quoted are in a measure rather a serious reflection on the manufacturers of wagons who have been quoting to the railway companies, and I think that that will not only affect them in this country but must seriously affect them in reference to foreign markets. Will you agree to an independent Committee being set up, nominated by the manufacturing interests which are concerned, to check the railway figures which you have quoted, because it is no good comparing railway figures with manufacturers' figures unless you know absolutely that you are comparing like with like. It is only fair that those figures should be checked by the manufacturers, as I am afraid that this would have a rather serious effect. There is another point with regard to private owners' wagons. I have addressed questions in the House on this matter. I understand from the statement which you have made that there are something like 15,000 private owners' wagons waiting for repairs.

I happen to know that some of the private owners say, "We will not repair until we are certain that we are going to receive fair compensation when those wagons are taken over." That is a question which should be dealt with without difficulty. Incidentally, they also ask for a definite understanding with regard to new wagons which they may build. I think that your statement on this point will to some extent meet them, but it

is necessary to know that they are going to receive fair compensation for the old wagons which they may repair. You know perfectly well that when there is a question of houses being taken over by local authorities the owner takes no interest in these houses going out of repair. The same thing applies to railway wagons. Unless the private owner is satisfied that he is going to be fairly dealt with, he will let the wagons go out of repair. That is why the question ought to be dealt with at once.

II.

MOTOR TRANSPORT.

There are no official figures giving the numbers of mechanically propelled vehicles existing immediately before or after the war and at the present time. Estimates are of doubtful value, but at mid-summer, 1920, over 700,000 motor vehicles were believed to be in use (see Cmd. 660, Interim Report of Departmental Committee on Taxation and Regulation of Road Vehicles). Under the revised system of motor vehicle taxation, official figures of the actual numbers, by classes, of mechanically propelled vehicles will later become available.

The figures of the amount of imported motor spirit upon which duty was paid indicate the extent to which consumption by motor vehicles has increased. Taking the pre-war year as standard at 100, the corresponding figures for the years 1919 and 1920 are 125 and 169.

The development of motor transport since the war has been stimulated by various factors: the disposal of surplus vehicles surrendered from warlike services: the increased efficiency and design due to the wide experience gained from the exigencies of the war: and, not least, the raising of the railway charges, both for passengers and for freight, which has considerably extended the competitive capacity of motor transport.

The Government are undertaking the task of improving the roads, and of revising, in the light of present-day developments and requirements, legislation affecting mechanical transport. Steps have already been taken to raise the additional revenue necessary to deal with road improvements (Roads Act 1920), and a classification of the roads is in hand.

Already the majority of the main roads are covered by regular motor-omnibus services. Motor-coach traffic has greatly increased and is carried over considerable distances. Much of such traffic is additional traffic created by motor enterprise, but a certain amount is drawn from the railways.

There are also signs of the railless car taking the place of new tramways or tramway extensions.

Freight-carrying by road has largely increased. For certain classes of traffic, road transport is rapidly gaining in favour even in cases where the cost by rail may be slightly cheaper. Door-to-door transit; elimination of

handling, of packing of danger of pilferage, and often of delay, have led many firms to go in for their own motor transport, thereby keeping the carriage of their goods under their own control, and gaining a certain advertising value out of their vehicles.

Even amongst the local carrier services working into the market towns the motor vehicle is beginning to find favour, and there is undoubtedly a field for development in this direction.

The multiplicity of ownership of commercial motor vehicles and the difficulties of avoiding a large proportion of empty running, have caused road transport clearing houses (or back loading agencies) to spring up in different places. Recently, under the auspices of representative associations of commercial motor enterprise, steps have been taken towards co-ordinating the activities of such clearing houses.

The high price of, and a threatened shortage in the supply of, motor fuel is tending to stimulate the use of the steam and the electric wagon. The former vehicle is specially adapted for heavy loads where speed is not the paramount consideration. The latter vehicle is of great utility for distribution work, especially, in congested areas or to and from warehouses where fire precautions are essential. Hilly districts or long hauls are, however, generally unsuitable for this type of vehicle, and its intensive development depends largely on improvement of means of storage of electric energy.

GREECE.

I.

RAILWAYS.

A.—Extent of the Railway System in Greece.

The railway system in Greece before the war of 1914 consisted of :

1,061 km. of standard-gauge lines ;
1,181 km. of narrow-gauge lines.

During the last war the line (89 km. standard gauge) from Papapouli (former Greco-Turkish frontier) to Plati (junction on the Salonika-Monastir line) was opened to the public. The construction of this line had been undertaken by the State. In August 1919, the Greek Government bought back the narrow-gauge lines (0 m. 60) from Sarakli to Anghista (115 km.). Hence, after the European war, towards the end of the year 1919, the Greek railway system consisted of :—

1,149 km. of standard-gauge lines ;
1,246 km. of narrow-gauge lines.

After the occupation of Thrace by the Greek armies (May 15th, 1920), and the signature of the Treaty of Sèvres (July 28th, 1920) the lines of Thrace (597 km. normal gauge) came under the sovereignty of Greece, and the Greek railway system has since consisted of :—

1,746 km. standard-gauge lines ;
1,246 km. narrow-gauge lines ;

i.e., a total of 2,992 lines, of which 1,319 standard gauge and 865 narrow gauge. 72 % of the Greek railways are operated by the State.

Expenditure on construction and general upkeep of the Greek railways amounted to :—

At the end of	Standard Gauge	Narrow Gauge	
1914	233,598,000	139,933,000	drachmas
1919	276,486,000	142,970,000	»
1920	362,544,000	146,170,000	»

B.—*State of Track and Engineering Works.*

During the war the upkeep of the lines was more or less neglected, owing to the scarcity of labour and the lack of spare parts, and also owing to the heavy traffic with which the lines had to deal. It follows that the administration, both owing to the above-mentioned reasons and to the increase in wages and in the cost of raw material, has incurred extraordinary expenditure, both during and since the war, on account of the upkeep of tracks and rolling stock.

During the period from 1914 to 1919, about 38 million drachmas were spent on auxiliary works of an indispensable nature, namely strengthening of the sub-structure and super-structure, construction or enlargement of buildings, workshops, repairing sheds, depots, and the establishment of a sorting station and on purchases of rolling stock. In order to put these lines and this rolling stock into working order, an additional extraordinary expenditure of 80 million drachmas will probably be necessary.

Apart from these urgent works, it will be necessary in the near future to undertake additional work with a view to the reconstruction of the lines, *e.g.*, the reinforcement of the line Piræus-Larissa-Papapouli. It will be necessary on this section, in order to permit the circulation of fast and heavy trains, to replace the rails of 34 km. by rails of 49 km. and to replace the wooden sleepers (which now have a span from axis to axis of 95 centimetres and of 60 centimetres at the joints) by metal sleepers (increasing the span from axis to axis to 74 or 68 centimetres and 56 centimetres at the joints).

In this way, the track will be uniform as far as Plati. This work will necessitate an expenditure of about 80 millions. Similar work will have to be undertaken to reinforce the remainder of the line from Plati to Guevguevi, taken by the Simplon-Orient express. It is estimated that this work will necessitate an expenditure of about 43 million drachmas—in other words, the total for lines of standard gauge will amount to $80 + 43 = 123$ million drachmas.

The reinforcement of the narrow-gauge lines will necessitate an expenditure of 40 million drachmas.

C.—*Proposed New Lines.*

At the present moment no new line is being constructed. The line from Uzunkopri to Gallipoli in Thrace, with a length of about 178 km., the construction of which was undertaken by the Turkish Government in 1915, is incomplete. The work was interrupted in 1918. The plans of this line are complete and the sub-structure has been completed over a length of 78 km. The Greek Government has not yet come to any decision with regard to the continuation of work on the line in question.

Since 1914 the Greek Government has had plans for various lines drawn up, with a view to completing the railway system. At the present moment the following plans are ready to be carried into effect :

1. *Standard Gauge.*

Line from Drama to Cavalla in Macedonia (planned by C. G. Wills & Son, 1920), 34,125 km. Estimated expenditure, 39,213,801 drachmas.

Line from Salonika to Anghista in Macedonia (planned by Hafner, 1915), 134,021 km. Estimated expenditure, 81 million drachmas.

Line from Kalabaka to Janina (planned by the Société des Batignolles, 1916), 105,200 km. Estimated expenditure, 400 million drachmas.

2. *Narrow Gauge.*

Line from Tripoli or Leontarion to Sparta and from Sparta to Ghitton in the Peloponnesus (planned by Floria, 1904-1915), 88 km.

Line from Herakkion to Messara in Crete (planned by Meinarakis, 1902), 17 km.

The following lines are being planned :

1. *Standard Gauge.*

Line from Piræus to Janina and to Valona. According to investigations carried out, the length of this line from Frantzi (station on the P. D. F. line near Yamia) through Carpenission-Arta-Lannina to the frontier would be 391 km. ; the estimated expenditure 512 million drachmas for the standard gauge and 307 million drachmas for the narrow gauge (one metre).

The survey of the standard-gauge section, Rivière Acheloos-Yannina-Frontier (length 227 km.), entrusted to the Italo-Hellenic Syndicate, is nearly completed.

Line Kalabaka-Cozani-Sorovits, length 150 km. The survey, begun in July 1914, was interrupted owing to the war.

A short preliminary survey of the following lines has also been carried out with a view to subsequent elaboration :

Larissa-Deminitsa, length 97.5 km. This line meets the Kalabaka-Cozani-Sorovits line at Deminitsa.

From km. 52 of the Larissa-Deminitsa to Verria (Caraféria) line, 100 km.

From km. 69.4 of the Kalabaka-Sorovits line to Koritsa, 125 km.

From km. 38 of the above line to Sorovits, 47 km., making a total of :

Lines surveyed.	479 km.
Lines to be surveyed	341 km.
Lines projected	370 km.

D.—*Rolling Stock.*

The rolling stock of the Greek railways in 1914 was as follows :

1. *Standard Gauge.*

Locomotives	108	Covered wagons	1,537
Tenders	82	Trucks	691
Passenger coaches	261	Cranes	4

In 1915 the Greek Government ordered 20 locomotives of the "Mikado" type (weight 82 tons) from America. During the Balkan wars six locomotives belonging to the Bulgarian Railways were taken by Greece as war booty.

In 1919-1920 the French Government ceded to Greece 10 locomotives (type P. 8) and 620 "Armistice" wagons, against a deposit of 800,000 dollars.

During the war, several coaches and wagons belonging to the Macedonian Railways were lost or destroyed. In this way, the park of rolling stock belonging to the Greek railways comprised at the end of 1920 (excluding the railways of Thrace):

Locomotives	152	Covered wagons	1,682
Tenders	116	Trucks	870
Passenger coaches	242	Cranes	3

2. *Narrow Gauge.*

The narrow-gauge rolling stock scarcely varied from 1914 to 1920, the only addition being the stock accruing from the purchase of the Sarakli-Anghista line.

Rolling Stock:	in 1914	in 1919-20
Locomotives	135	142
Tenders	5	8
Passenger coaches	413	409
Covered wagons	745	784
Trucks	652	825
Cranes	8	8

Average for 10 km. of line :

	Standard Gauge	Narrow Gauge
Locomotives	1,15	1,14
Carriages	1,83	3,28
Covered wagons	12,74	6,29
Trucks	6,18	6,62

E.—*Condition of Rolling Stock.*

Owing to the war the rolling stock has not been kept up to standard.

1. *Standard Gauge.*

On the Greek railway system (P. D. F. System) — 20 % of the locomotives are under repair, waiting their turn to enter the workshops. The number of locomotives unfit for service will probably increase in 1921 owing to the increased mileage allotted to those in use.

30 % of passenger coaches are unfit for service, for the same reasons.

As regards the rolling stock for goods traffic, its upkeep is up to date and it is sufficient in quantity.

The delay in the repair of rolling stock is due to :

1. Smaller output from the workshop.
2. Lack of spare parts.
3. Insufficiency of workshop plant.

On the Macedonian railway system (C. O. S. M. and J. S. C.) there are 45 % of the locomotives and 30 % of the passenger coaches unfit for service—either under repair or waiting to enter the workshops. The upkeep of the goods stock is satisfactory. The estimated cost of completing and repairing the rolling stock and the standard-gauge workshops is about 20 million drachmas.

2. *Narrow Gauge.*

The upkeep of the rolling stock of narrow-gauge lines is rather backward so far as heavy repairs are concerned, but it is hoped that this delay will be made good in the course of the present year by increasing the output of the workshops, which are for the most part adequate.

F.—*Urgent Requirements in the matter of Rolling Stock.*

1. *Standard Gauge.*

Passenger coaches are needed on the Piræus-Plati line.

The cost of the purchase of these coaches would amount to about 3,000,000 drachmas. The remainder of the rolling stock is sufficient at present.

2. *Narrow Gauge.*

About ten locomotives and 100 goods trucks, to the value of about 5 million drachmas, are needed.

The total cost of completing and renovating the rolling stock of the railways in Greece would thus amount to about 28 million drachmas.

G.—Traffic.

Operation of the Rolling Stock.

The results of the operation of the Macedonian railways (C. O. S. M. and J. S. C.) for the years 1914 and 1919 are unobtainable. The last figures available are those for the year 1912. Since then these lines have had their administration and method of working changed on several occasions, and for this reason it has not been possible to assemble the requisite statistical information.

These railways were administered by the companies holding the concessions until September 1915, when they were taken over by the Greek Government, which administered them until May 21st, 1916. On this date they were taken over by the French Army of the East and were operated during the whole of the war under the French military regime. The latter handed back the C. O. and S. M. lines to the Greek Government on March 1st, 1920, which also purchased the J. S. C. line from the concessionary company on July 1st, 1920.

The Macedonian railways have therefore not been included in the comparative tables of working results for the years 1914 and 1919 and after. The operation figures for the year 1920 have not yet been obtained.

The comparative tables show that the distance covered by the rolling stock during 1919 increased by 66 % as regards broad-gauge lines in comparison with 1914, but decreased by 13 % on the narrow-gauge lines. The composition of the trains has not changed much ; passenger trains show a decrease of more than 50 %, whilst the number of goods trains has greatly increased.

The weight carried per kilometre has not varied much on normal-gauge lines. More passenger kilometric-tons have, however, been transported in 1919 than in 1914, but less goods kilometric-tons. As regards narrow-gauge lines, the weight transported shows an increase of 15 % both for passenger and goods traffic.

Generally speaking, the passenger traffic for 1919 compared with 1914 was higher by 14 % on standard-gauge lines, and the average distance travelled per passenger increased by 8.3 %, and on the narrow-gauge lines it was higher by 11 % and 24 % respectively.

In 1919, compared with 1914, the luggage traffic was higher by 67 % on the normal-gauge lines and the average distance 66 % higher ; on the standard-gauge lines it was higher by 23 % and 2 % respectively.

Goods Traffic.

Fast goods traffic on standard-gauge lines was higher by 253 %; and the average distance by 22 % ; on narrow-gauge lines it was higher by 8 % and 7 % respectively.

Slow goods traffic on the standard-gauge lines was higher by 9 %, and the average distance lower by 28 % ; on the narrow-gauge lines it was respectively lower by 1 % and higher by 11 % than in 1914.

The traffic of livestock, large and small, was less by 25 % on the standard-gauge lines and 60% higher on the narrow-gauge lines than in 1914.

	Standard gauge		Narrow gauge	
	1914	1919	1914	1919
<i>Total distance :</i>	Km.	Km.	Km.	Km.
Locomotives	1,055,709	11,951,870	3,393,829	3,023,416
Coaches	1,721,441	—	12,291,378	10,467,608
Wagons	4,660,014	—	13,234,873	11,582,771
Trains	965,975	1,651,252	2,516,388	2,364,329
<i>Effective running per km. of line :</i>				
Locomotives	2,286	3,671	2,948	2,673
Coaches	3,903	—	10,679	9,255
Wagons	10,567	—	11,498	10,241
Trains	2,287	3,121	2,186	2,091
<i>Average composition of trains :</i>				
Locomotives	1.044	—	1.03	1.025
Coaches	1.707	—	4.45	4.86
Wagons	4.621	—	3.29	3.41
Number of passenger trains per day	6.	3.18	14.30	4.96
Number of goods trains per day	0.263	4.23	0.61	1.11
<i>Weight transported :</i>				
Total dead weight of locomotives, coaches and wagons.	112,952,852	—	243,731,377	202,883,422
Useful load, passenger	3,330,853	8,327,234	9,014,555	12,649,621
Useful load, luggage, goods and live stock kilometre-tons	14,070,170	12,829,700	40,361,950	44,280,937
Useful load, per kilometre of track	39,458	39,994	43,658	50,337
Weight transported per kilometre of track	295,587	—	256,999	229,923

Comparative Table of Traffic.

	Standard gauge		Narrow gauge	
	1914	1919	1914	1919
<i>Passengers: 1st, 2nd and 3rd class</i>	623,762	852,598	4,553,830	5,030,047
<i>Passengers per kilometre of track</i>	1,414	1,612	4,026	4,448
<i>Passenger-kilometres</i>	47,583,615	118,960,494	144,141,822	196,666,652
<i>Average journey per passenger-kilometre</i>	76,285	139,526	31,653	39,098
<i>Luggage, Goods and Live Stock:</i>				
<i>Total weight of luggage-tons</i>	2,022	3,377	7,088	8,700
<i>Luggage, kilometre-tons</i>	258,816	718,488	558,697	700,248
<i>Average journey, luggage, kilometres</i>	128	212	78,8	80,5
<i>Total weight, fast goods, tons</i>	3,462	12,064	27,915	30,271
<i>Fast goods, kilometre-tons</i>	384,282	1,640,705	2,761,116	3,211,267
<i>Fast goods, average journey, kilometres</i>	111	136	98,9	106
<i>Slow goods, total weight, tons</i>	92,282	100,281	514,164	506,879
<i>Slow goods, kilometre-tons</i>	12,550,352	9,793,200	36,507,762	40,201,114
<i>Slow goods, average journey, kilometre-tons</i>	136	97,6	71	79,2
<i>Livestock (Large): fast and slow freight train</i>	516	1,128	1,423	6,843
<i>(Small), fast and slow freight trains</i>	118,900	88,700	57,332	87,035
<i>General live stock, km.-tons</i>	876,720	673,312	—	1,114,336

H.—Rates.

Before the war an average of 4.5 centimes per traveller-kilometre were collected in old Greece, and 8 to 10 centimes per ton-kilometre for slow-traffic goods.

Since 1916 the general rates have been increased successively by 20 %, 10 %, 30 %, 20 % and 10 %, and special rates were abolished. Thus, on standard-gauge lines (P. D. F.) the average general rates have been increased from 1914 to the end of 1919 by 160 %, and up to the end of 1920, by 240 %; on narrow-gauge lines up to the end of 1919, by 78 %, and up to the end of 1920, by 110 %.

As a result of the abolition of special rates, the cost of transportation was increased on standard-gauge (P. D. F.) lines, up to the end of 1919, by 400 %, and to the end of 1920 by 533 %, and on narrow-gauge lines this cost was increased to 297 % up to the end of 1919 and to 396 % up to the end of 1920.

Rates for accessory expenses on all lines have increased on an average by 244 % up to the end of 1918.

Rates for military transport have increased since May 1918 to the same extent as other rates, and these increases amounted, at the end of 1919, to 30 % on standard-gauge, and 200 % on narrow-gauge lines.

For special military trains these increases have reached 165 % and 135 % respectively.

The application of these new increased rates has resulted in a rise in receipts much greater than the increase in passenger and goods traffic indicated above; the average increase compared with the unit price of transport (per passenger-ton) is given in the following table:

Total average increase per passenger-ton in Railway Receipts for former Greece in 1919, as compared with 1914.

Lines	Year	Average receipt per Passenger-kilometre	Increase	Average receipt per goods kilometre-ton	Increase	Average receipt per km.-ton general traffic	Increase
Standard-gauge (P. D. F.)	1914	0,042	200%	0,100	280%	0,196	265%
	1919	0,126		0,380		0,720	
Narrow-gauge	1914	0,0465	68%	0,130	153%	0,301	118%
	1919	0,0785		0,309		0,658	

I.—*Fuel.*1.—*Consumption.*

Standard-Gauge Lines (P. D. F.).—In 1914 the consumption of fuel amounted to 11,157 tons of English coal at an average cost of 37.07 drachmas per ton, and in 1919 to 37,429 tons, 2,431 of which was native lignite and 976 tons of wood fuel.

The coal consumed in 1919 originated from various sources, and the average price was 270.55 drachmas per ton, that of lignite 140 drachmas and that of wood fuel 72 drachmas per ton.

The cost of consumption per ton kilometre amounted to 83 drachmas in 1914 and 120 drachmes in 1920. The increase in consumption was due partly to the poor quality of the coal and partly to the use of fuel of lower calorific power, such as lignite and wood fuel.

Narrow-Gauge Lines.—On the narrow-gauge mines in former Greece 26,243 tons of English coal were consumed in 1914, at an average price of 37 drachmas, and in 1919 44,864 tons, consisting of 18,123 tons of coal from various sources at an average price of 271.40 drachmas; 11,357 tons of native lignite at an average price of 101.70 drachmas, and 15,473 tons of wood fuel at an average price of 78.50 drachmas.

The average consumption per kilometre-ton amounted to 89.6 grammes in 1914, and 172 grammes in 1919.

2.—*Total Increase of Expenditure due to Fuel.*

The increase of expenditure in 1919, as compared with 1914, which resulted from the increased consumption and the higher cost price of fuel amounted to 9,091,000 drachmas for standard-gauge lines (P. D. F.), and 7,750,000 drachmas for narrow-gauge lines (P. D. F.).

J. *Financial Situation of Greek Railways.*

The table on page 99, which gives the financial situation of the railways of former Greece, includes the most important general information, except the statistics of the Macedonian railways for the years 1914 to 1919.

General Results of the Operation of Railways during the years 1914 to 1919.

Year	Receipts	Working Expenses	Co-efficient of Operation	Net Receipts	Expenses of the Administrative Board	Capital account	Interest on Original Capital	Results of Operation of Railways
I. Normal Gauge.								
1914	3,633,734	3,382,998	93 %	+250,736	88,000	500,000	4,500,000	- 4,749,264
1919	20,543,877	22,724,175	100.6 %	-2,180,298	72,625	500,000	6,637,812	- 9,890,735
II. Narrow Gauge.								
1914	11,347,749	6,863,188	60.5 %	+4,484,561	240,092	4,040,104	2,829,146	- 2,824,780
1919	29,095,090	24,030,098	82.5 %	+5,064,132	476,307	3,788,370	2,829,466	- 2,030,000

II.

MARITIME NAVIGATION.

In 1914 the Greek fleet was composed of the following :

474 steamships with a total tonnage of	830,000 tons.
884 sailing vessels with a total tonnage of	135,000 »
<hr/>	
Total	965,000 tons.

During the war the merchant fleet suffered serious losses, amounting to :

227 steamships of a total tonnage of	669,600 tons.
240 sailing vessels of a total tonnage of	18,000 »
<hr/>	
Total	687,600 tons.

At the end of the war, therefore, in December 1918, the merchant fleet consisted only of :

200 steamships of a tonnage of	180,000 tons.
640 sailing vessels with a total tonnage of	115,000 »
<hr/>	
Total	295,000 tons.

Since the Armistice and up to the end of January 1921, the following have been acquired or built :

200 steamships with a total tonnage of	350,000 tons.
500 sailing vessels with a total tonnage of	80,000 »
<hr/>	
Total	430,000 tons.

From these must be deducted the following vessels, which have suffered shipwreck or have been sold :

10 steamships with a total tonnage of	15,000 tons.
40 sailing vessels with a total tonnage of	300 »

At the beginning of 1921, therefore, the merchant fleet consisted of :

390 steamships with a total tonnage of	515,000 tons.
1100 sailing vessels with a total tonnage of	177,000 »
<hr/>	
Total	692,000 tons.

Shipping Lines.

Forty-nine passenger and cargo steamships, with a total tonnage of 25,000, and a large number of sailing vessels carry on passenger and goods traffic between the various ports of the country.

Twenty-five passenger and cargo steamships, with a tonnage of 26,000, carry on trade, particularly regular services between Piraeus-Marseilles, Piraeus-Brindisi, Piraeus-Alexandria and Piraeus-Smyrna-Constantinople.

Four Transatlantic steamships, tonnage 37,000, run from the Piraeus to New York.

Seventeen steamships requisitioned which have been, (tonnage 25,000), are at present fulfilling the requirements of State transport.

The remainder, apart from a few small steamships and tugs, is composed of 200 cargo vessels, with a tonnage of about 315,000, which do not run on regular lines, but for the most part ply between foreign ports, especially between America, England and France.

The reason for this is partly that the total tonnage of these cargo vessels is greater than the import and export needs of the country, and partly that Greek shipowners have no objection to sailing their vessels in distant seas, provided that they obtain good freights.

The import and export trade of Greece, therefore, is not served entirely or even preferably by national vessels, but, taking advantage of the most advantageous freight conditions, she makes use of vessels under foreign flags and particularly of British vessels.

Before the war one of the most important fields of action for the Greek merchant fleet was the Black Sea, and she will certainly recover this field when Russian affairs have been settled and when exports into Roumania have been resumed. To give an idea of this activity, we may state that 25 % of the tonnage of the vessels proceeding from the mouth of the Danube alone sailed under the Greek flag. Indeed, in 1914, out of a total tonnage of vessels sailing from here, 1,356,090, 461,000 tons were under the British flag, 331,030 tons under the Greek, and the rest under all other flags.

III.

INLAND NAVIGATION.

The rivers of Greece are not navigable. Nevertheless, a considerable fleet of river craft under the Greek flag carries on transportation of goods on the Lower Danube between Turnu-Severin and Galatz, a distance of 670 km.

These vessels, consisting of 355 barges, with a total tonnage of 319,334, form about half of the tonnage of the river fleet between the mouths of the Danube and the Iron Gates.

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GUATEMALA.

The Republic of Guatemala is one of the most important states of Central America ; its territory is 125,000 square kilometres in extent, and its population numbers 2 ½ million persons. It has an excellent geographical situation, with three ports on the Atlantic Ocean (Puerto Barrios, Livingston and Santo Tomás) and three on the Pacific (San José, Champerico, and Ocos).

The most important port on the Atlantic is Puerto Barrios, and on the Pacific San José ; these two ports possess rapid interoceanic railway communications, which cross Guatemala, pass through the capital of the Republic, unite the two oceans and not only facilitate the rapid transport of all the traffic of the country, but are also of great assistance to the neighbouring republics.

These two ports form the extreme limits of this railway, which is 269 miles long, a distance which can be covered in 17 hours. The line unites the Republic to Mexico, and joins at the frontier the line which runs to the capital of that republic ; and it has branch lines which unite the different provinces to one another. Various schemes are being considered for the construction of new railways to effect contact with the neighbouring republics, especially with Salvador, and also to join the rich agricultural and commercial provinces of "los Altos" with those of "del Centro".

* * *

The total length of railway track in the Republic is 1,030 kilometres.

The major portion is worked by a North American company, the International Railways of Central America. The railways may be considered as being divided into the following three sections :

Pan-American Section.—This section comprises the line which starts from Santa Maria and runs to the Mexican frontier. It forms part of the Pan-American line in accordance with the agreement arrived at by the Congress of Diplomats held at Washington—the line which is destined to unite the whole length of America from the town of Dawson in Alaska to Valparaiso in Chile, covering a total distance of 16,000 kilometres.

Pacific Section.—This section comprises the line running from the capital to the port of San José on the Pacific (which meets the Pan-American at Santa Maria), the line which runs from Retalhukeo to Champerico (on the Pacific) and the line running from Ocos (secondary port on the Pacific) to Ayutla on the Mexican frontier.

Atlantic Section.—Line of Puerto Barrios on the Atlantic.

Besides these three principal sections, there is the Vera Paz railway, which, starting from Pancajché, an important centre of the Alta Vera Paz region, terminates at the river port of Panzos.

All these railways run mixed passenger, luggage and goods trains and special goods trains.

About 1,000 to 1,500 persons pass through the central station every day. It is impossible to give exact details of the tonnage of goods and luggage, but the figures are considerable. Under the new régime, there has been an important increase, as there is no restriction on passengers and transport entering or leaving the country.

* * *

In addition to the above-named railways, there are innumerable roads, which assist the transport of our products both for export and local consumption, and to which the new administration has given special attention. There are also different services of motor lorries for transporting passengers and goods; and there are rivers of a purely local but not international interest, such as the Rio Polochio, with its river port Panzos, and the Rio Motagua with Gualan as its port; these rivers can be used only by small vessels carrying passengers, luggage and goods, etc. All these different routes cross the Republic from south to north, connecting the two oceans, and they serve the export of our products from Puerto Barrios on the Atlantic and San José on the Pacific. The principal products are gold, silver, copper, iron, lead, zinc, antimony, coal, stone, sulphur, mica and sugar, bananas, wood for the manufacture of furniture, hides, indiarubber, medicinal herbs, fruit, cocoa, and coffee, of which 1,500,000 to 2,000,000 bags are exported annually. At the present time a committee of experts is prospecting and studying the working of oil wells, which will probably form a great source of wealth for the country.

* * *

In 1914, the year of the war, the exports amounted to \$15,130,000 (gold).

In 1919, the year after the war, the exports amounted to \$24,550,000 (gold).

* * *

The principal articles imported are cotton fabrics, wool and silk, agricultural and industrial machinery, iron goods, drapery, pianos, vehicles,

billiard tables, musical instruments, professional instruments, paintings, varnish, medicines, perfumes, jewellery, precious stones, fancy goods, motor-cars, electrical plant, preserves, wines, liqueurs, corks, cigarette paper, stationery, etc., etc.

In 1914, the year of the war, imports amounted to \$6,870,000 (gold).

In 1919, the year after the war, imports amounted to \$10,157,000 (gold).

These figures prove clearly the importance of Guatemala trade and the very marked increase since the war; the trade figure for 1919 was \$34,717,000 (gold) while that for 1914 was \$22,000,000 (gold), which makes an increase of \$12,717,000 (gold) since the war, not including 1920, in which year the exports rose 30 % and the imports 10 % as against 1919, approximately (exact figures not being available because the detailed statements in respect of 1920 are at present being submitted by the various departments to the regular session of the Legislative Assembly.

* * *

Shipping.

The principal shipping lines used by the Republic of Guatemala for its foreign trade are as follows :

The ships of the Pacific Mail S.S. Co. visit the Pacific ports of the Republic, plying from San Francisco in California to Panama; at Panama they connect with the French Transatlantic, the Spanish Transatlantic, and the Veloce Italian Company, which cross the Atlantic from Europe.

The ships of the Pacific Steam Navigation Company, which ply between Champerico (Guatemala) and Panama, connect at the latter port with those of the Royal Steam Packet Company, which ply between Colon and the European ports.

Latterly, several lines have been instituted which ply between our ports and the other ports on the Pacific.

The ships of the United Fruit Co. call weekly at the Atlantic ports Puerto Barrios and Livingston in a direct service from New Orleans and New York; these ships receive passengers and goods from the European ports, the goods being transhipped at New York; the passengers and goods arrive by the Transatlantic European lines referred to above.

The only direct line coming from the ports of Europe is the Royal Dutch Mail, which calls once a month at Puerto Barrios, and can execute direct transport with Europe.

Communication with Europe by the above-mentioned lines, with the exception of the Dutch line, is long and costly, on account of the great distances to be covered, the transshipments, and the numerous calls that have to be made; goods take over 45 days to reach their destination. No mention has been made of the Barcelona-Panama line, which plies to the Pacific, as this difficult route involves a great waste of time.

Traffic in the Ports of the Republic, 1914.

Incoming	{	Steam packets and sailing vessels	846
		Tonnage	1,145,401
		Passengers	7,013
Outgoing	{	Steam packets and sailing vessels	840
		Tonnage	1,110,105
		Passengers	7,464

Traffic, 1919.

Incoming	{	Steam packets and sailing vessels	1,300
		Tonnage	2,248,000
		Passengers	23,000
Outgoing	{	Steam packets and sailing vessels	1,494
		Tonnage	2,240,000
		Passengers (approx.)	27,000

These comparative tables show the difference between the traffic in the year of the war and the year after the war.

It is not difficult to form an idea of the importance which Guatemala's commerce with the European countries might assume if there were direct communications. Such communications could be effected by the existing Transatlantic lines, which might call at least once a month at Puerto Barrios—our principal Atlantic port.

The line most adapted for this improvement is the Spanish Transatlantic Company, whose ships leave Barcelona regularly every month for Havana and Mexico, and thus sail very near to our ports and the ports of Honduras. Therefore :

Considering the extensive and varied nature of the commerce which might be transacted between Central America and Europe, and the advantages of a direct line from Barcelona to Puerto Barrios (Guatemala) with few calls, which would effect a great saving of time, and be highly advantageous for the development of commercial relations between America and Europe, which are at present of minor importance owing to the lack of communications ;

And considering that the Republic of Guatemala is, by reason of the development of its commercial shipping, the most suitable country to act as a link between Central America and the Iberian Peninsula and other European countries, and that these relations cannot fail to create important general international commerce ;

And considering that Spain has coasts on the Mediterranean Sea and the Atlantic Ocean and has rapid means of communication with the Great European Powers, such as France, Italy, England, etc., and is therefore in a specially advantageous position in Europe ;

And considering that there would be great benefit on all sides from such a direct route for passengers, emigrants, correspondence, parcels, etc.,

The Delegate of the Government of the Republic of Guatemala presents this statement in the hope that it will be taken into consideration, and that recommendations may be made favourable to Guatemala, and thereby to all Central America, particularly with a view to the establishment by the most rapid means of a maritime route for communications and transport between Barcelona (Spain)—since this port is a favourable centre of communication with the principal European cities — and Puerto Barrios (Guatemala).

This line might take the following route :

Barcelona, Cadiz, Canary Islands, Havana, Mexico, Puerto Barrios, New Orleans, New York, and vice versa.

HAITI.

The system of internal communications and transport in the Republic of Haiti corresponds to the geographical, topographical and climatic conditions of the country. The area of the territory is 27,552 square kilometres with a population of 2,500,000 persons, and there are thus 94 inhabitants per square kilometre; the towns being in many cases situated at short distances from one another, both in the interior of the country and on the coasts. The general configuration of the country, which forms two large peninsulas enclosing the Gulf of Gonave, renders the coast-line very long, while the interior of the country is narrow; owing to the nearness of its coasts to the frontier of the Dominican Republic. Rain descends from chains of high mountains into the various rivers which traverse the cultivated plains in all directions.

All these circumstances have a direct influence upon the conditions of communication and the means of transport throughout the entire country. The harvest collected on the hills and in the plains is transported by animal traction on the paths and roads which lead to ports open to foreign trade, or act as connecting roads between the plantations and the populations of the interior; these methods of transport, although primitive, are the best suited to the requirements of agriculture and are only employed during the harvest seasons.

Postal service and passenger traffic are effected on roads parallel to the coast or crossing the country, which date from the time of colonisation. The local government and administration endeavour to keep them in good condition in spite of the damage caused by the long rainy seasons ¹.

I.

RAILWAYS.

There is a narrow-gauge railway system in Haiti, the construction of which was begun about 25 years ago, but which has had to be suspended owing to the difficulties caused by the war. The various railways and

¹ Cf. B. Aubin, *En Haïti*, Paris, 1910.

tramways, owned by companies of Haitian nationality, were constructed by Germans or North Americans. On the capital of the Port-au-Prince to l'Etang-Saumâtre line, limited to 16,000 dollars per kilometre, the State of Haiti had guaranteed interest of 6 % on the security of a part of the export dues. In 1915 the total length of the railway was 252 kilometres, and since then it has not been possible to develop it.

The following are the lines at present in operation :

From Port-au-Prince to Mirabelais and Las Caobas (33 km.) ;

From Port-au-Prince to Cap Haitien (169 km.) ;

From Port-au-Prince to Léogane (22 km.) ;

From Port-au-Prince to L'Etang-Saumâtre (45 km.).¹

These are only sections of a railway which will cross the departments of the north, west, north-west and the Artibonite, and it is desirable that work should be resumed in order to continue the construction and complete it as soon as possible. It is also desirable that new concessions should be asked for in accordance with the laws of the Republic, and that the companies which obtain them should possess the honesty, the capital and the perseverance necessary in order to bring the work to a successful conclusion, with the twofold object of realising lucrative results and of contributing in this way to the agricultural and commercial progress of the people of Haiti.

II.

NAVIGABLE WATERWAYS.

The only river which is navigable for a distance exceeding 150 kilometres is the Artibonite, and a service of boats on this river would do much to develop the manifold wealth of this fertile region. A proposal put forward by M. Leon Nau relating to the establishment and working of a service of boats on this river was voted some years ago by Parliament, but has not been put into effect.

III.

SHIPPING.

In 1914 both the coasting trade and the over-seas trade were organised under the conditions best adapted to the requirements of the trade of Haiti.

¹ Cf. S. Vincent, *La République d'Haiti telle qu'elle est*, Bruxelles, 1910, pp. 176-177.

Traffic in the ports in	1913	1914	1916
was represented by	1,194	906	112 vessels
with a tonnage of	2,276,765	1,171,546	420,474 tons.

The ships effecting this traffic belong to the following companies and lines :—

(a) Compagnie Côtière Haïtienne,—B. Rivière & Co.—Coasting line.

(b) Compagnie Générale Transatlantique, monthly service : Havre-Bordeaux-Haiti, calling at Port-au-Prince and Cap Haïtien.

Fort-de-France to Port-au-Prince line, calling at Les Cayes, Jérémie and Jacmel.

Auxiliary Service : Gonaïves, St. Marc and Petit Goâve.

(c) Hamburg Amerika Line, Hamburg, Port-au-Prince, calling at Cap Haïtien, St. Marc, Gonaïves and Port de Paix.

Atlas Service : New York, Port de Paix, Cap Haïtien, St. Marc and Gonaïves.

(d) Koninklyke Westindische Maildienst—from Amsterdam to Jacmel, Les Cayes, Jérémie, Petit Gôave.

Special Service : New York to Port-au-Prince, via St. Marc and Gonaïves.

(e) Norwegian Line : New York to the ports of Haiti.

(f) Other Lines : Spanish, Italian, Anglo-American, etc., with transhipment at New York or at the ports of the Antilles.

The difference to be noted between the shipping figures previous to 1914 compared with those of later years is due to the absence of the ships of the Hamburg Company and to the irregularity of the service of the Compagnie Générale Transatlantique. The latter has reorganised its former time-table and there is every reason to hope that the system of communication with Bordeaux and Le Havre will soon be as extensive as it was before the war ; but Haiti will be without the co-operation of the German line, which was the principal factor in assisting the export of Haitian produce to the markets of Northern Europe.

In order to compensate for the absence of this line, as well as to consolidate and increase traffic with the markets of Northern Europe, it would be desirable to establish a shipping service between the ports of Great Britain and those of Haiti similar to that which formerly existed. Commercial relations between Haiti and the Mediterranean ports should also be established and developed, and it would be very advantageous to realise the idea, already suggested, that the Société Générale des Transports à Vapeur should be encouraged to organise a regular service between Marseilles and Haiti, calling at the Spanish ports and those of Italy, North Africa, the Adriatic and the Levant as far as the Black Sea, which would open up for Haitian produce the markets of Spain, Italy, Central Europe, the whole of North Africa, the Balkan countries, South Russia, Greece and the East.

Ports.

There are twelve ports in Haiti open to foreign trade : Port-au-Aquin, Prince, Cap Haïtien, Jacmel, Jérémie, Gonaïves, Les Cayes, St. Marc, Miragoâne, Port-de-Paix, Petit Goâve and Môle St. Nicholas, and there are also four ports of call which are used for the export of campeachy wood and other timber, namely : Anse d'Hainault, Port à Piment, Port Liberté et Grande Saline.

Exports.

The most important produce of Haiti is coffee, which yields a yearly harvest of 100 million pounds, two-thirds of which is exported and the remainder consumed in the country. Next in order, the chief exports are the following : cocoa, cotton, campeachy and other dye-woods, fine timber, oleaginous grain, fruit, rinds, grain, sugar, syrup, etc., of which the quantities exported are indicated in the following table :—

	In 1914	In 1918
Coffee lb.	78,512,000	39,000,000
Cocoa »	6,088,000	4,500,000
Cotton »	3,122,000	2,780,000
Oleaginous grains »	5,370,000	9,921,629
Dye-woods »	62,021,040	57,149,000
Wax »	82,445	28,000
Honey »	1,264,690	1,706,000
Maize »	—	21,119,000
Leather and Skins. »	507,000	429,000
Orange peel. »	515,295	—
Fruit, vegetables, etc. »	1,551,448	—
Mahogany (cubic feet)	—	205,517

Trade.

Value of Exports.

	1917	1918
	Dollars	
United States	4,000,000	6,750,000
France	4,200,000	3,000,000
England	1,000,000	100,000
Germany	—	—
Other countries	3,800,000	1,150,000
Total (dollars)	13,000,000	11,000,000

Value of Imports.

	<u>1914</u>	<u>1917</u>	<u>1918</u>
	Dollars	Dollars	
From the :			
United States	6,381,000	7,500,000	9,000,000
France	345,000	500,000	500,000
England	409,000	700,000	350,000
Germany	338,000	—	—
Other countries	138,000	1,300,000	250,000
	<hr/>	<hr/>	<hr/>
Total (dollars)	7,612,000	10,000,000	10,100,000

In concluding these notes, we venture to take this opportunity of repeating the wishes expressed at the second Pan-American Conference of Washington by the Delegation of the Republic of Haiti, which voiced the aspirations of the people and Government of Haiti in words full of loyalty and patriotism, which seem to us worthy of textual reproduction :

"We have frequently insisted in the Haitian Committee upon the urgent necessity of the reconstruction of railways into the interior of Haiti. But pending the establishment of a complete railway system, which is an undertaking requiring time and considerable capital, our Committee has unanimously expressed the wish that the construction of roads should be actively undertaken in order to facilitate, in every way, the transport of produce, which is now wasted in the interior of the country owing to the lack of means to transport it to our coasts for export, and in order to assist at the same time the development of production." "The Committee has also asked that the greater part of the funds which will be available as a result of the next loan should be employed on the construction of roads in Haiti. The frequenting of our ports by foreign ships desirous of collecting freight depends upon the construction of these roads, which will facilitate the arrival in our Customs Offices of all our present and future produce. Moreover, our Delegation has formally promised that the Government of Haiti will afford all the assistance in its power to shipping companies whose ships arrange to call regularly at our ports."

HUNGARY.

I.

RAILWAYS.

A. THE POSITION OF THE HUNGARIAN STATE RAILWAYS.

Extent of the System.

The length of line of the Hungarian State Railways and local services coming under their administration, possessed before the war a total length of track of 19,642 km.

Owing to the conditions now prevailing, the length of track has undergone the following alterations :

Within the frontiers determined by the Treaty of Peace the length of track is 7,052 km., of which 2,998 km. (863 km. double track) come within our own system, while 4,054 km. are. local lines under our administration. All these tracks are of standard gauge, with the exception of a small local railway 16 km. in length. The length of track still occupied by the Serbians includes 124 km. of "M. A. V." lines and 424 km. of local lines ; in all 548 km.

On the other hand, the length of lines of the Hungarian Western line is : "M. A. V." lines, 38 km., local lines 192 km. ; or 230 km. in all.

When our old frontiers were in their former position we handled transit traffic at 14 frontier stations which were equipped with all the necessary appliances and plant. In future, we shall have 46 frontier stations, which are not at present equipped with the indispensable installations for transit service, and the majority of which cannot be reconstructed for the purpose.

Maintenance of Track.

Before the war the condition of our lines and of their installations was above reproach, and our trains ran at the maximum speed allowed by law over the whole system, namely at 50 to 100 kms an hour on the main lines, and 40 km. an hour on branch lines and local lines.

The maintenance of the track is at present fraught with serious difficulties on account of the lack of sufficient sleepers, a result of the Treaty of Peace, which deprived us of 86 % of our forests.

As the renewal of sleepers, which was to have been carried out next spring, is not possible, on the required scale, in present circumstances, we are forced to reduce considerably the speed of the trains, particularly on the branch lines.

We require some 700,000 sleepers for the current year. In order to procure them, we even have to purchase trunks of trees. We are also ourselves exploiting certain forests in order to obtain the necessary sleepers.

In spite of these efforts, we cannot count on providing more than half at most of the above quantity from our present territory; the rest must be imported from outside, chiefly from Austria.

As regards material for iron super-structures, it is probable that this year, again, we shall have no difficulty in obtaining a sufficient quantity for the factories still belonging to our country should be able to supply the 80 to 100 wagons of iron products necessary.

As regards materials essential for the maintenance of the road-bed, we particularly need timber and scaffolding-pins.

Lastly, the lack of timber, material for roofing, glass and paint makes it very difficult to maintain our buildings in good repair.

Requirements in Rolling Stock.

(a) *Locomotives.*—In order to cope with traffic of the same volume as on June 30th, 1914, within our present frontiers, we should require :

1582 1st-class locomotives.

665 2nd-class locomotives.

in all : 2,247 locomotives.

This number of locomotives is moreover due to us in accordance with the decisions of the Commission.

Of the stock of locomotives which we possessed on June 30th, 1914, and of the locomotives purchased between that period and November 3rd, 1918, we possess at present :

1,132 1st-class locomotives.

580 2nd-class locomotives.

5 3rd-class locomotives.

in all : 1,717 locomotives.

We are short, therefore, of :

450 of the 1st class;

85 of the 2nd class;

in all : 535 locomotives.

These 535 locomotives should be restored to us by the Rumanians out of the 1,140 locomotives which they took from us and removed from the country.

Of the above-mentioned 1,717 locomotives at present in our possession, 226 of the 1st category and 50 of the 2nd category were acquired by us from 40 to 50 years ago. These machines are old, of an obsolete type, and of very small capacity ; moreover, they are in such a deplorable condition that very soon it will be impossible to use them any longer. If the Rumanians do not give us back the 532 locomotives, we shall have to replace them by new ones.

(b) *Passenger Carriages*.—On June 30th 1914, we had 8,846 passenger carriages. We now possess 2,348. In spite of the unwearying efforts of our repair-sheds, 700 of this number are still undergoing repairs.

The Rumanians selected for removal the carriages which were in good condition, leaving us damaged carriages of which the interior fittings had been stripped. Owing to the lack of materials the repair of these carriages is proceeding very slowly.

In order to cope with the present passenger traffic we shall require about 3,350 carriages (0.47 per km.).

In consequence there is, out of the 2,348 carriages, a shortage of 1,000 passenger carriages. We need these all the more urgently because the Rumanians have taken away our new coaches, which carried the largest number of passengers, and have left us worn out carriages of an old type. The majority of the latter—say some 300—are so worn out that it is more economical to take them off the rails and scrap them than to repair them.

We do not know yet how many carriages the Rumanians will give us back, as a result of the mediation of the Commission, or of what quality they will be ; but it is certain that we cannot develop our passenger traffic, if we wish to, unless we can get new carriages.

(c) *Goods Wagons*.—In 1913 (that is, in the last year before the war) the Hungarian State Railways carried 37,000,000 tons, of which 16,000,000 are the quota of the territory which remains to us under the Treaty of Peace. These 16,000,000 tons correspond to 43 % of the total quantity of goods conveyed, and since our rolling stock amounted on November 3rd, 1918, to 104,757 trucks, we shall still require 43 %.

If we take into consideration the type of goods carried—as we must for the selection of the types of trucks,—we find we should need 45 % of our previous quota, which corresponds to 47,140 trucks.

On the other hand, when the general census of rolling stock was made on April 8th, 1920, on all railways within the lines of demarcation, there were only 18,832 “M. A. V.” wagons in non-occupied Hungarian territory, which means that we now require 28,308 trucks.

Although the Allocation Commission in Vienna has not yet determined the final allocation of trucks, we can be certain, even now, that on the basis of the census returns of the trucks seized and unjustly confiscated by the States which have succeeded to the Austro-Hungarian Empire, we shall not

receive restitution of the quantity which we have legitimately claimed. In order that we may have rolling stock available in time to cope with the expected traffic, we must procure a larger quantity of trucks; but it is essential that we should be in possession of our full number of vehicles because those which we are using at present cannot all be fairly reckoned as efficient rolling stock, seeing that 17 % are in need of radical repairs.

Further, as a result of the depreciation of our money, we have to restrict to a minimum the use of foreign trucks; and since our enemies have carried off our best trucks, leaving us the worst, we shall be obliged very shortly to throw the greater part of our vehicles out of use and replace them, provisionally, by at least 15,000 new ones.

Works under Construction.

The following are the most important works at present in course of construction :

(1) Enlargement of the hydraulic establishment of the North with pneumatic wells, Fischer system, and technical equipment.

(2) Enlargement of the briquette factory at Rakes.

(3) Enlargement of the sand-brick factory at Dunakeszi-Alag :—a second complete compressing plant and a third boiler for drying.

We can only supply figures to represent the importance and cost of these works, which are required in connection with traction, when conventions have been arranged with the adjoining States with regard to traffic and transit stations, and when we are allowed to run our engines into the depôts and terminal stations. These agreements are indispensable in order that we may know at what points on the new frontiers we are to construct new engine depôts, or—it may be—only turntables and water-stations; and whether we should—at certain points—completely abolish connecting tracks which are unnecessary or even injurious to ourselves.

From this point of view we ought to try to designate as frontier stations those which are suited for the purpose by their equipment, or which could be rendered suitable to meet the demands of the service at a very small cost.

What the result of this will be and what success it will meet with we cannot foresee. We are therefore only able to estimate the cost by making certain assumptions.

Assuming that, with the frontiers as they have been recently drawn, it will prove impossible to reach an agreement of the kind suggested above in regard to these transit stations, we should have to create establishments for traction, with accessory buildings (dwellings hutments, etc.), at 12 stations on local lines and at 10 stations on the main lines, which would involve an expenditure of about 60 million crowns, whereas the creation of traction depôts at the transit stations on the main lines would cost about 350 million crowns.

Assuming that the frontiers which are to be defined are permanently fixed, we should have to convert and enlarge some of the stations which

we are now obliged to use as transit stations, but which were never designed for frontier stations. Salgetarjan, Gyékényes, Sáteraljanjhely, etc., are stations of this kind.

The conversion of these stations to make them conform to the requirements of transit stations might cost another 25 million crowns, so that if the present frontiers are to remain definitely fixed, we must allow a sum of 435 million crowns for the creation of technical traction establishments at the frontier stations.

Workshops.

We have already eight workshops for the repair of rolling stock.

The workshop at Debreczen—almost entirely plundered by the Rumanians—has been put in order at a great cost, and we have, as far as was possible, replaced the lost plant by fresh equipment obtained from abroad. The shortage of plant in this workshop, as in the main shops of Istvantelek and the North, was due to its being plundered by the Rumanians.

Owing to the introduction of piece work in the month of November last, and when the equipment of the shops had been completed as mentioned above, the potential output of our workshops increased considerably above our expectations. This is well illustrated by the following examples.

In the period between the collapse of the "dictatorship of the proletariat" and the introduction of the system of piece work we effected an average of 24 important locomotive repairs per month. In September 1920 we repaired 96.

This output has fallen to 57 because the greater part of our locomotives are in need of boiler repairs. But the value of our output is nevertheless not less than for September.

In regard to the repair of carriages, the following results have been obtained :

In the period which followed the "dictatorship of the proletariat" we overhauled, on an average, 100 passenger coaches per month ; 454 passenger coaches were overhauled in May, and 234 in November last.

This decreased output is due to the fact that, in recent months, the passenger coaches could not be transported in sufficient numbers to the workshops.

As regards goods wagons, we overhauled an average of 240 per month in the period after the fall of the "dictatorship of the proletariat", and at present we are overhauling about 1,230 per month.

It was due to this satisfactory development that, on the one hand, we were able to meet the requirements of our own traffic, and that, on the other hand—in order to create economic relations with Serbia and, above all, to ensure the import of food-stuffs from Serbia—we were able, in the month of April 1920, to conclude advantageous contracts for the repair of 250 Serbian locomotives, and in September of the same year—with the assistance of the Hungarian carriage-building shops—for the repair of 500

passenger coaches and 2,000 goods trucks, without endangering our own traffic or sacrificing the ability to supply it with sufficient rolling stock for its requirements.

The completion of the delayed overhauling of locomotives and the gradual repair of the interior fittings of our passenger coaches is of special importance in order to give occupation to our personnel and provide work for our shops in the future.

As regards the overhauling of locomotives, this should be finished, in the least favourable circumstances, by the end of the year 1923—that is to say, the repairs of all recent locomotives after the regulation 8-years service and of old locomotives after the regulation 5-years service should be completed by that date.

In fact, we intend to undertake the general overhauling, without further delay, of 1,254 locomotives. We may be able to speed up our monthly output of work of this kind by reorganising the work, and re-classifying the workmen. After January 1921 we may raise the total, by this means, to 47 per month in place of 27 per month as at present. We may also, in this way, finish overhauling the 1,254 engines which are in arrears (including those which will have meanwhile become due for overhauling before the end of 1923, without having recourse to private industry. We are especially reluctant to have recourse to private industry for the overhauling of these locomotives because, apart from the exorbitant expense involved, we have need of this work to provide occupation for our regular workmen. The primarily indispensable condition of the execution of this work is the provision of the copper plates for repair of fire-boxes. We believe that, as a result of the steps which we have taken, we have succeeded in eliminating the danger of a lack of material.

The interior reconstruction of passenger coaches is mainly retarded by the extraordinary difficulty of procuring the necessary materials—leather and stuffs—and by their exorbitantly high price, which means that this work is dependent on the economic situation of our country. Nevertheless, we are in hopes that our equipment will enable us to satisfy a large proportion of our requirements.

Passenger Traffic.

On June 15th, 1914 that is before the war, the number of train-kilometers covered by passenger trains on the "M. A. V." Lines was 181,190 kilometres. During the war our passenger traffic continuously diminished and during the period which preceded the Revolutions it became very inconstant, fluctuating from day to day.

On the present M. A. V. railway system the number of kilometres covered daily by passenger trains was :—

10,926 km. for February 1920.

12,383 " " March 1920.

13,815 " " April 1920.

18,617 " " May 1920.

20,340	km.	for	June 1920.
21,528	»	»	July 1920.
22,657	»	»	August 1920.
23,212	»	»	September 1920.

Regular passenger traffic has been almost entirely re-established by the aid of time-tables adapted to the needs of the service, and by the institution of through passenger trains. The departure and arrival of our passenger trains at the termini was almost exactly according to schedule during last autumn, whereas during the same period of the previous year, when disorder was prevalent, the trains were habitually five or six hours late.

The through trains recently instituted on the Budapest-Vienna line have provided us with rapid and convenient connection with the countries of Western Europe.

The best proof of the need for these trains is the extent to which they have been used, in spite of the considerable increase of fares. These trains brought in 6 to 7 million crowns in the month of October and 8 million crowns net in the month of November.

The possibility of further improvement in the passenger service depends entirely on the quantities of coal available.

In November last, the number of kilometres traversed daily by our passenger trains was still 22,777 km. But as the coal situation became worse, we have been forced since December 1920 to reduce considerably the number of trains travelling on Saturdays and Sundays, so that the present number of kilometres traversed daily is only 20,990 km.

Rates.

The increases since the year 1913 in the rates on the Hungarian State Railways were as follows :

Date introduced	Nature of Increase	Percentage of Increase
<i>(a) Passenger and Luggage Rates.</i>		
November. 15th 1917	Passenger rates	70-120 %
	Luggage, dogs and express luggage rates	100 %
June 15th, 1919	Passenger rates, luggage, dogs and express luggage rates .	200 %
August 11th. 1920	Passenger rates, luggage, dogs and express luggage rates .	400 %

(b) Goods Rates

February, 1st 1917	War tax	30 %
January. 1st 1918	1st. class incomplete loads, large goods ; 3a and b, exceptional rates	50. %

Changes in the Classification of Goods :

Date introduced.	Nature of Increase.	Percentage of Increase
September, 1st 1918	Coal	40 %
	Other goods	
	Supplements	70 %
June, 15th 1919	General increase (for all goods without exception)	200 %
	New general increase.	300 %
August, 11th 1920		

Decrease of Rolling Stock.

At the commencement of the war the Hungarian State Railways had about 3,900 locomotives, 70 royal coaches and saloon coaches, 8,000 passenger coaches, 3,500 vans and mail vans, and 84,000 goods trucks. This rolling stock was constantly increased, as far as was possible, even during the war, so that on September, 1st 1920, our total stock of locomotives was 5,010, of coaches 8,846 and of goods trucks 105,300 (on December, 20th 1920, we had, according to our lists, 5,060 locomotives).

As a result of the enemy occupation which occurred during the Karolyi Revolution, and particularly as result of the Roumanian requisitions in the second half of 1919, our actual rolling stock is at present considerably lower than the figures given in the lists.

Indeed, at the beginning of the present year, we only had 1,700 locomotives of which 62 % were unusable and in need of extensive repairs.

Of the 3,249 locomotives which we had lost, about 2,000 are in the hands of the Rumanians, 500 have remained on the Croatian lines and 400 others are in the territory occupied by the Serbs ; 233 are in possession of the Czechs, and 32 are held by the Ukrainians, Italians and Austrians ; 50 more had to be surrendered to the Serbians in accordance with the conditions of the Belgrade Armistice, and the whereabouts of 60 others is unknown.

Thanks to the intense activity of our workshops, the number of locomotives which could be used, which had fallen to 430 at the end of 1919, had risen by September 1st, 1920, to 934. (In December we had 958 locomotives fit for service.) The number of locomotives under repair has thus fallen to 816, that is 45.8 % of the original 62 %. (At the present time there are 834 locomotives under repair that is, 45.53 %.)

Moreover, we have lent 10 locomotives to the Serbians, 28 to the Czechs, 5 to local railways—in all, 43 locomotives.

Of the 8,846 passenger coaches shown in the lists, we have only 2,246 left, according to the census of April 8th, 1920, of which 28 % that is, 633 coaches are in need of considerable repairs. (The present percentage of repairs is 27 %.)

As regards goods trucks, the situation is equally unfavourable. In particular, of the 105,300 trucks shown on the lists we have only 17,070 available for service, according to the returns of the census of April 8th, 1920, of which 27 %, i.e. 4,705 trucks, are in need of repairs.

Apart from these 17,070 trucks marked as the property of the M.A.V., we have also at our disposal 20,871 foreign trucks. This figure has, however, since decreased by about 5,000, because a proportion of trucks belonging to private railways or to the German Empire has already been sent back, in accordance with agreements concluded in the interval. (The percentage of repairs of goods trucks is at present only 17 %.)

The result of the census of rolling stock, which took place September 12/14th, 1920, is not yet known. The Committee of Circulation at Vienna is engaged on this matter.

Personnel.

The number of personnel of the Hungarian State Railways for the period from 1914 to the present day is shown in the following table:—

	High Officials	Railway Servants	Workmen	Total
In 1914.....	8,059	60,833	94,355	165,247
1914-15	7,765	59,265	50,272	125,302
1915-16	7,651	67,171	53,356	128,178
1916-17	7,729	68,642	60,310	136,681
At the end of 1918	7,681	69,553	66,161	143,395
In June 1919	4,572	33,139	—	—
In September 1919.....	4,421	23,971	24,164	52,356
At the present time	5,028	33,300	34,930	73,258
Refugees ¹	1,394	8,611	—	10,005

Coal.

We are still faced with grave difficulties in the provision of necessary materials from the working of railways and workshops. It will be sufficient to refer to the general shortage of materials, the extraordinary decrease in the value of money, and the serious obstacles which impede normal traffic with the States which surround us.

These economic and political difficulties have a particularly paralysing effect on the supply of wooden materials (for the workshops, for the upkeep of the track and for heating).

In peace time the collieries situated in the territory of the now dismembered Hungary produced 20,000 tons of coal a day, whereas the production in November 1920 only averaged 14,500 tons a day—, that is,

¹ On December 23rd, 1920, the number of wagons occupied by refugees was 2,272.

a decrease of 27.5 % compared with the peace-time production. Of this reduced quantity, an average of 5,000 tons a day is placed at the disposal of the Royal Hungarian State Railways for the haulage service, for operating the railways, for heating and for the increased traffic during the last months.

The quantities placed at our disposal by the National Coal Committee are not sufficient to meet the demands of present traffic without permanent restrictions, which cause great difficulties.

For the resumption of ordinary train traffic we require 141,000 tons a month of standard coal (of 4,500 calories).

Seeing that only 115,000 tons monthly are placed at our disposal for the above-mentioned purpose, we are still short of 26,000 tons of coal a month.

In peace time, during the year 1913, the quantities of coal used for locomotives were produced as follows :

1. 76 % from the national collieries.
2. 5 % from Ostrau, Dombrau and Karwin.
3. 19 % from Silesia and Prussia.

In peace time we did not make exclusive use for traction of the coal which came from the Tata collieries, since this coal — being light, with a tendency to scatter sparks, could not be used economically except together with the less brittle coal from the collieries of the Pecs districts. For this reason the immediate liberation of the latter collieries would be of the greatest possible service to our railway system.

It is impossible to run heavily loaded trains at high speeds exclusively with coal from the Hungarian fields, and consequently we require a tolerably large supply of foreign coal (about 6,500 calories), particularly as we have lost the collieries of the Zsil Valley.

For the resumption of normal traffic we want about 30,000 tons a month of high-grade foreign coal, over and above the quantities put at our disposal.

Financial Situation.

With regard to the financial situation of the Hungarian State Railways, we can supply the following information. The balance sheets of our last financial years were as follow :—

1. Before the war :

	Financial Years		
	1911	1912	1913
	Crowns	Crowns	Crowns
Total receipts	412,618,423	447,799,635	459,284,103
Total expenses	303,401,411	337,667,230	368,770,395
Net profit	109,217,012	110,132,405	90,513,708
Percentage	73.53 %	75.41 %	80.29 %

2. During the war:

	Financial Years			
	1914-15	1915-16	1916-17	1917-18
	Crowns	Crowns	Crowns	Crowns
Total receipts . . .	474,395,888	697,042,593	650,487,067	800,014,500
Total expenses . .	313,970,879	402,429,765	519,994,037	773,580,601
Net profit	160,425,009	276,612,828	130,493,030	106,433,889
Percentage	66.18 %	59.26 %	79.94 %	87.01 %

3.—We cannot yet supply precise details for the years since the war ; it is impossible to complete the accounts for the years 1918-19, 1919-20, because the work of the accountants is in arrears owing to the changes in the general situation of the country and the continuous troubles caused by the enemy occupations during this period.

But such provisional figures as are available for these two years point to a considerable deficit.

As regards the year 1920-21, only the provisional results for the period July-December 1920 are known and these amount to 1,400,696,000 crowns.

The expenses for the period July-November 1920
 were 780,346,240 crowns
 And those estimated for the month of December
 1920 amount to 186,000,000 »

in all: . . 966,346,240 crowns

From this it can be seen that the revenue obtained in the first six months of the financial year 1920-21 exceeds the expenses for the same period by 434,349,760 crowns.

This surplus is due to the increase in the rates which has been in force since August 1920.

But, having regard to the fact that the reconstruction of the track and the necessary working repairs of our railways — which are in a very dilapidated condition—will involve very heavy expenditure during the rest of the financial year, and having regard also to the very high wages we have to pay and the exorbitant prices of materials, we cannot expect a higher rate of profit for this financial year (1920-21).

B. POSITION OF THE RAILWAYS IN THE SOUTH (SÜDBAHN).

As regards the position of the Hungarian lines of the Southern Railway Company before the war, after the Armistice, and at the present time, we have the honour to furnish the following information.

The data relating to questions connected with the length of the lines, the condition of the rolling stock, the amount of traffic, the increase in

the rates, the consumption of fuel and other materials, the number of the employees, and the financial situation, are given in full detail in Annexes I to X.

With regard to the facts contained in the above-mentioned Annexes we would add the following observations:

The figures for open and covered goods trucks must be considered as being part of one common supply for the whole of our lines. The figures for the rolling stock, given in Annex V, for the lines of the Hungarian railway system were worked out having regard to the length of these lines in kilometres.

The figures regarding repairs of rolling stock show at present a tendency to improvement; this does not, however, hold good as regards materials the dearth of which is a cause of serious difficulties and an obstacle to work under normal conditions. According to Annex VI, 18 locomotives have been for a long time awaiting important repairs, but our only repair shop at Szekesfehervar is unable to receive them for this purpose owing to the congestion of work and lack of material.

The state of affairs is the same as regards repairs of rolling stock; it is even aggravated by the great difficulties due to the long time occupied in repairing trucks and carriages which arrive at the workshop with many serious injuries and stripped of their internal fittings.

Between August 3rd, 1919, and November 23 of the same year, the Rumanians deprived us of the following rolling stock:

Carriages marked D. V.

(1) Passenger carriages and vans	41	{	97
(2) Tank trucks (Reservoir trucks)	56		
(3) Goods Trucks: (a) covered	1,175	{	1,838
(b) open	663		
Total			1,935

Carriages marked G. K. B.

(4) Goods Trucks: (a) covered	10	{	42
(b) open	32		

Total number of carriages marked D. V. and G. K. B. 1,977

Taking the traffic of the year 1914 as a basis of calculation, and having regard to the exigences of the present traffic, our requirements in locomotives and rolling stock are as follows:

Our traffic in 1914, over a system of 704.1 kilometres, required a total number of 164 locomotives. Deducting 12 %, the proportion which must be allowed for those under repair, we had, actually, an available total

of 144 engines. To obtain the same results on the present railway system of 566.3 kilometres, we should require 166 locomotives.

With the frontiers of Western Hungary in the positions fixed by the Treaty of Peace, the length of the railways in kilometres only worked out at 539.7 kilometres; but in view of the technical requirements of the traffic and the working of the lines, our Administration will no doubt have to arrange for train haulage as far as Wiener-Neustadt. The present strength of locomotives amounts to 152. Assuming 43 % of the machines to be under repair, there will remain at our disposal an available total of 87 locomotives.

If it should prove possible, by utilizing all available means, to reduce the proportion of locomotives under repair to 30 %, and to overcome to some extent the difficulties due to lack of material, we could have an available total of 106 locomotives fit for service. The shortage would then amount to 10 locomotives, the purchase price of which may be reckoned, in present circumstances, at approximately 80,000,000 crowns.

In order to provide for the normal working of this traffic, it would also be necessary to enlarge the locomotive establishments and the repair shop, and to adapt them for work on a much larger scale. These alterations are specially required in view of the intensive and continuous use which was made of these establishments during the war without anything having been done to enlarge them.

As regards the data concerning the shortage of rolling stock, we would point out that, in view of the difficulties which existed as long ago as 1914, the present total of passenger carriages would suffice for the requirements of a restricted traffic—making allowance for the fact that we have been deprived of certain lines—but if we wish to eliminate all the difficulties which existed in 1914 (reduction of the length of shifts, etc.), we should require, to operate traffic of the same intensity as in 1914, at least 100 passenger carriages; for it must be remembered that the paralyzing effects of lack of coal will, for a long time to come, cause great difficulties, even after the resumption of normal traffic; and also that the amount of repairs still shows a tendency to increase, in consequence of the lack of raw materials and of the diminished output of labour.

The purchase price of these carriages amounts to 1,000,000 crowns per carriage, *i.e.*, in all 100,000,000 crowns.

For the requirements of goods traffic, taking the traffic statistics of 1914 as a standard, and having regard to present difficulties—the dearth of coal, the long duration and the large amount of repairs owing to the lack of raw materials and of labour—we should require at least 150 goods trucks in order to maintain normal traffic.

The purchase price of these trucks amounts to 500,000 crowns each, making a total of 75,000,000 crowns.

* * *

Annex IV, which gives the cost of the new frontier stations, has been drawn up on the assumption that it will be necessary to lay three new

lines of rail, and to construct a turn-table for each of the three stations, and finally to construct three new reception offices with an area of 300 square metres each.

It should be pointed out that, according to the provisions of the Treaty of Peace, the frontier stations of our railway system are as follows :

Lövo, near the Austrian frontier ; *Murakeresztur* and *Barcs*, near the frontier of the Serb-Croat-Slovene Kingdom. Owing to the situation resulting from the present occupation, the station of Babocsa must be considered as the frontier station in the direction of *Barcs*.

With the exception of the station at *Barcs*, the above-mentioned stations are unsuited for the work of frontier stations. In the first place, they do not possess the necessary installations. The small width of the tracks does not allow sufficient time for the trains and loads to be shunted. There are no turn-tables for locomotives. Neither at *Lövo* nor at *Babocsa* are there coaling-depots, goods-sheds or sidings for shunting which could be used for carrying out customs formalities. Furthermore, unless extensive new works can be undertaken, these stations will possess neither accommodation for the personnel of the locomotives and trains, nor offices and quarters for the officials and employees of the public services.

* * *

As regards the supply of coal, the situation, though changing from day to day, remains unfavourable. The administration, allotment and distribution of coal is carried out under the supervision of the Government ; it is therefore quite impossible for us to exercise any influence upon our supply of coal, which depends entirely on the Government Commissioner.

At present, the quantities placed at our disposal are calculated on the basis of the minimum number of trains running, but we have no guarantee that we shall actually receive these quantities, and, in consequence, we are compelled to suspend the traffic at frequent intervals, and sometimes even without notice, since our supply of coal never exceeds the quantity which is required for the needs of one day. In addition, the inferior quality of the local coal has a paralysing effect on the running of the trains and compels us to extend the time taken on journeys and to reduce our loads. It is only with the coal obtained from abroad that we can operate our express trains and our special fast trains.

STATEMENT
of the Kilometric Lengths of the Railway Lines of the Southern Railway operated by the Directorate of Budapest,
according to the Returns for October 31st, 1918, and for the present day.

Serial No.	LINES	Length of Lines-Kilometres				Remarks
		Oct. 31st 1918.		Present day		
		In Con- struction.	In work- ing.	In Con- struction.	In work- ing.	
A. — Lines belonging to the Southern Rail- way.						
1.	Frontier/Wiener-Neustadt/Nagykanizsa ..	193,273	192,811	193,273	192,811	1. In calculating these distances the present lines of demarcation have been made use of, and not the frontiers fixed by the Treaty of Peace.
2.	Frontier/Csaktornya-Budapest	278,148	277,989	235,807	233,808	
3.	Szokesfeherwar-Komarom	80,236	81,907	80,236	81,907	
4.	Murakeresztur-Bares	71,487	71,388	68,318	58,339	
5.	Frontier/Fiume	2,387	3,255	—	—	
6.	Frontier/near Zapresic-Sziszek-Goldova ..	76,772	76,772	—	—	
	Total.....	702,303	704,123	577,634	566,865	2. Lengths of li- nes at present under construc- tion have been calculated as far as the line of demarcation, whereas the len- gths of line at present being worked are only calculated as far as the unoccu- pied frontier stations because our trains do not run beyond these points.
B. — Foreign Lines operated by the South- ern Railway.						
7.	Bares-Pakrac	93,640	93,647	—	—	
8.	Suhopolje-Slatine	17,297	16,939	—	—	
9.	Bastaji-Koncaniza	12,857	12,587	—	—	
	Total.....	123,794	123,173	—	—	
	Total of Nos. 1 to 9	826,097	827,295	577,634	566,865	

ANNEX II.

Southern Railways.

Directorate of Budapest.

NUMBERS OF PERSONNEL.

Classification	1914	1918	1921
Officials	470	504	463
Female employees.....	32	43	63
Subordinate employees.....	820	885	827
Subordinate Officials (Clerks).....	1,324	1,360	1,194
Day labourers	100	119	100
Labourers	3,828	3,660	2,856
Total...	6,374	6,571	5,503

ANNEX III.

BALANCE SHEET.

(Hungarian Railway System)

Financial Year	Receipts	Expenditure	Profits
	In Crowns	In Crowns	In Crowns
1913	27,558,836,68	18,422,737,80	9,136,098,88
1914	27,122,968,27	17,588,247,61	9,434,690,66
1915	31,938,535,06	18,849,237,10	13,089,297,96
1916	37,960,378,11	24,048,421,76	13,911,956,35
1917	44,607,057,34	31,737,779,98	12,869,977,36
1918	65,328,880,54	49,963,337,64	15,365,554,90

NOTE.—The balance sheets for the financial years 1919 and 1920 are unknown to us as they were drawn up separately for the Hungarian railway system. In view of the restricted circulation of the trains, due to the suspension of traffic with the neighbouring States for almost two years, the receipts have shown a considerable reduction; the expenses, on the other hand, have increased to such an extent that the profits of the previous years have been entirely absorbed, with the result that we have been forced to ask the Government for periodical advances. The total of these advances amounts at present to 132 millions of crowns.

ANNEX IV.

Southern Railway.

Directorate of Budapest.

STATEMENT

*of the Expenditure necessitated by the Construction of New
Frontier Stations.*

Serial No.	Structures and Installations	Amount	Total
	<i>I. At the Station of Murakeresztur.</i>		
1.	Enlargement of the railway station area for three new lines of rail and construction of buildings	1,300,000	
2.	Widening of the level crossing for three tracks.....	300,000	
3.	Widening of the covered viaduct by three metres for three lines of rail.....	1,000,000	
4.	Construction of new tracks (Super-structure).....	10,400,000	
5.	Construction of a new turn-table of 20 metres	3,500,000	
6.	Construction of a new forwarding office with two floors	5,000,000	
7.	Renovation of the present safety arrangements by new signal-boxes	3,500,000	
8.	Unforeseen expenses	3,000,000	
	Total.....		28,000,000
	<i>II. At the Station of Lővo.</i>		
9.	Enlargement of the railway station area as in "I"	1,400,000	
10.	Widening of the covered viaduct by 0.95 metres for three new tracks.....	500,000	
11.	Diversion of the entrance way to the warehouse and the loading platform.....	1,000,000	
	Total.....		
	<i>Carried forward.....</i>	2,900,000	28,000,000

ANNEX IV (*continued*).

Serial No.	Structures and Installations	Amount	Total
	<i>Brought forward.....</i>	2,900,000	28,000,000
12.	Construction of new lines (Super-structure).....	9,700,000	
13.	Construction of a new turn-table of 20 metres	3,500,000	
14.	Construction of new forwarding office of two floors.....	5,000,000	
15.	Shifting the present goods shed and loading platforms	500,000	
16.	Shifting the present cantilever bridge	200,000	
17.	Shifting the present cattle platform	100,000	
18.	Renovation and enlargement of the present safety arrangements with new signal-boxes.....	2,000,000	
19.	Unforeseen expenditure.....	2,100,000	
	Total.....		26,000,000
	<i>III. At the Station of Babocsa.</i>		
20.	Enlargement of the railway station area as in "I"	800,000	
21.	Construction of new lines (Super-structure).....	7,300,000	
22.	Construction of a new turn-table of 20 metres	3,500,000	
23.	Construction of new forwarding offices with two floors.....	5,000,000	
24.	Renovation and enlargement of present safety arrangements with new signal-boxes	2,500,000	
25.	Unforeseen expenditure.....	1,900,000	
	Total.....		21,000,000
	Total I to III ..		75,000,000

ANNEX V.

Southern Railway.

Directorate of Budapest.

STATEMENT

*of Rolling Stock and Repairs according to the Returns
of October 31st, 1914, October 31st, 1918, and October 31st, 1920.*

Nature of Vehicles	Number of Vehicles					
	Fit for Service			Under Repair		
	1914	1918	1920	1914	1918	1920
				%	%	%
Saloon cars.....	5	4	4	9.5	12.5	24.5
Passenger coaches ...	391	383	327	38	48	81
Vans.....	104	108	56	10	16	17
Mail-vans	8	8	8			3
Luggage vans.....	56	56	1		1	
Breakdown wagons ..	6	6	6			
Heating vans	2	2	2	3.9	5	26
Horse boxes	17	17	14			1
Coal trucks.....	42	53	52			2
Covered goods wagons	1,060	1,049	848	32	34	242
Goods Trucks.....	1,152	1,136	920	65	71	248

ANNEX VI.

Southern Railway.

Directorate of Budapest.

STATEMENT

*of Locomotives and Locomotive Repairs according to the returns
of October 31st, 1914, 1918 and 1920.*

		Locomotives					
		Fit for service			Under repair		
War Marking	Series	1914	1918	1920	1914	1918	1920
II. 275	106.206	13	13	13	2	4	9 ¹
—	306						
—	17 a	10	10	1	1	3	
—	17 c	23	23	21	3	5	7
II. 225	18	12	12	7	2	3	4
II. 100	4	4	4	4	1	1	1
III. 400	109	6	9	9		4	5
—	429	6	6	6	1	3	4
—	60	9	9	9	2	4	3 ²
III. 275	29	60	60	53	8	24	22 ³
375	32 c	23	23	18	2	8	6 ⁴
400	32	6	6		1	3	
225	32 d	8	8	3	1	3	2
Total...		180	180	144	24	35	63
					14 %	33 %	44 %

The locomotives of the Bares-Pakrack railway, the lease of which has been acquired.

VII. 225	32 d	11	11	8	1	4	3
Grand		191	191	152	25	69	66
Total...					13 %	36 %	43 %

¹ 6 awaiting repair. ² 2 awaiting repair. ³ 9 awaiting repair. ⁴ 1 awaiting repair.

ANNEX VII.

Southern Railway.

Directorate of Budapest.

STATEMENT

*of the Results of Traffic in the period from January 1st to October 31st,
1913, 1918 and 1920.*

Item	From the 1st January to 31st Oct.		
	1913	1918	1920
Number of trains	44,504	32,240	7,965
Number of official trains	3,350	2,333	1,443
Total	47,854	34,573	9,407
Number of train-kilometres	3,872,318	3,129,850	838,333
Number of official train-kilometres	275,362	226,556	151,902
Total	4,147,680	3,356,406	990,235
Gross load (per 1,000 kilometric tons)	1,037,933	1,336,880	261,369
Gross official load (per 1,000 kilo- metric tons).....	71,535	96,771	47,358
Total	1,109,468	1,433,651	308,727
Net load (per 1,000 kilometric tons)	296,079	291,033	57,625
Net official load (per 1,000 kilo- metric tons).....	18,361	21,066	10,447
Total	314,440	312,099	68,072
Tons transported.....	3,068,516	2,862,319	559,326
Official tons transported.....	218,928	206,945	101,350
Total	3,287,444	3,069,264	660,676
Average gross load of trains in tons	268	426	311
Average gross load of official trains in tons	260	428	312
Average net load of trains in tons	77	93	70
Average net load of official trains in tons	67	93	69

ANNEX VIII.

Southern Railway.

Directorate of Budapest.

Traffic—Passengers and Luggage.

Date and proportion of the increase in rates.	Increase of a 100-heller charge (in hellers)						
	Fast trains			Slow trains			Lug- gage
	I.	II.	III.	I.	II.	III.	
1st Feb. 1917 ...	112	131	120	110	125	132	125
Increase	12 %	31 %	20 %	10 %	25 %	32 %	25 %
15th Nov. 1917..	221	200	191	184	159	147	167
Increase	97 %	53 %	59 %	67 %	27 %	11 %	33 %
15th June 1919 .	663	600	273	562	477	441	500
Increase	200 %	200 %	200 %	200 %	200 %	200 %	200 %
20th July 1920..	1,325	1,200	1,146	1,104	964	882	1,500
Increase	100 %	100 %	100 %	100 %	100 %	100 %	100 %
22nd August 1920	1,989	1,800	1,719	1,656	1,431	1,323	2,500
Increase	50 %	50 %	50 %	50 %	50 %	50 %	150 %

The reductions must depend on the improvement of the economic situation, apart from the effects of an increase in the purchasing power of our money. An improvement in this respect must be hoped for, primarily as a result of the resumption of free trade and direct international traffic.

ANNEX IX.

Southern Railway.

Directorate of Budapest.

Goods Traffic by Slow Trains and Fast Trains.

Date and proportion of the increase of the charges.	Increase of s 100-heller charge (in hellers)				
	F. T. Full rate	F. T. reduced rate	I class	II class	Other classes
1st February 1917. F. F. Reduced rates 30% Other rates 25%	125	130	125	125	125
1st January 1918. F. F. and 1st class 50%	188	195	188	125	125
1st September 1918. General increase and surtax 70%	345	357	335	228	221
15th June 1919. General increase 200%	1,036	1,071	1,005	684	663
20th July 1920. General increase 100%	2,070	2,142	2,010	1,368	1,326
22nd August 1920. General increase 100%	4,140	4,284	4,020	2,736	2,652

Note :— An improvement cannot be expected except by slow degrees and only :

- 1) when the frontiers have been definitely fixed.
- 2) when free commerce and direct traffic has been resumed.
- 3) when the purchasing power of money has increased.

ANNEX X.

Southern Railway

Directorate of Budapest.

STATEMENT

of Passenger Traffic in 1914, 1918 and 1920.

Months	Number of passengers		
	1914	1918	1920
January.....	228,803	332,075	349,355
February.....	216,034	338,505	324,760
March.....	271,892	411,116	392,598
April.....	314,176	398,056	335,057
May.....	319,178	447,767	368,388
June.....	358,163	499,604	382,644
July.....	335,993	565,736	419,661
August.....	225,420	678,961	431,067
September.....	260,778	611,738	327,857
October.....	286,541	445,362	305,849
November.....	294,130	476,776	236,085
December.....	306,835	334,692	238,406
Total...	3,447,943	5,540,388	4,111,727

The increase in the number of passengers corresponds to the movements *en masse* which have taken place since the end of the war.

The increase in comparison with the returns for passenger traffic in 1914 is to be accounted for partly by the marked rise in popularity the baths of Lake Balaton, and on the other and, by more frequent journeys for business purposes.

C. — THE POSITION OF THE GYOR-SOPRON-EBENFURT RAILWAY.

General Information.

1. (Length of line.)

2. (Number of personnel.)

The line worked by the Gyor-Sopron-Ebenfurt Railway Company (Limited) which owns the railway, extends from Gyor *via* Sopron as far as Lajtaujfalu, *i.e.*, to the frontier.

At Gyor it connects with the Hungarian State Railways, and at Ebenfurt it is in contact with the Austrian State Railways; at Sopron, on the other hand, it communicates, by a connecting line, with the Southern Railway.

The length of the above-mentioned main line is 120,36 km. In addition, we operate the local line of Ferte, which starts from Celldömölk (on the State railway line), crosses the Gyor-Sopron-Ebenfurt line at Eszterhaza, and again reaches the State railway system at the station of Pandorfalu. The length of this line which is being worked is 107,65 km. The total length of the lines being worked is therefore 228,01 km.

The principal stations on the main line are Gyor, Csorna, Kapuvar Garta, Esterhaza, Sopron (office of the Directorate) Vulkapordany and Laytaujfalu. Practically the whole of these lines are laid over flat country.

The Gyor-Sopron-Ebenfurt Railway, and also the local branch line of Ferte, are administered and operated by the company itself. The offices of the company and of the General Directorate are at Budapest; the working of the line is carried out by the Directorate, which has its office at Sopron.

The numbers of personnel are as follows: 54 higher grade officials, 153 employees, 240 minor officials, and 403 day labourers, workmen, etc., making an average of 3.76 persons per km.

No change has taken place since 1913, either in the length of lines being worked or in the personnel employed.

Maintenance of the Line.

The present condition of our railway has deteriorated seriously in comparison with 1913. The road bed, and especially the bridges, are in a very bad condition; the paint having worn off, many of the bridges are weakened by rust. Good varieties of paint cannot be procured; those which were obtainable were merely substitutes and would be useless for preventing rust.

The most striking deterioration is noticeable on the permanent way itself, for the rails, sleepers and accessories are unobtainable in Hungary as it now exists. To meet our annual requirements of 60,000 sleepers, we have only 13,000 sleepers available. We have only been able to provide even this quantity by restricting the renewals of sleepers during the last three years.

But these unsatisfactory conditions cannot be continued indefinitely, because the number of defective sleepers is increasing and makes the working of the line dangerous. We are also unable to obtain switches and crossings.

The buildings are also, to a great extent, in a deplorable condition. It has been impossible to undertake serious repairs in view of the extraordinary rise in wages and especially owing to the lack of building materials for construction.

Some of these materials, such as iron girders, building timber, plates, etc., are either unobtainable or can only be procured with great difficulty. The buildings are therefore becoming more and more dilapidated owing to this lack of materials.

Rolling Stock.

Locomotives.—Since 1913 there has been no change in the number of locomotives (28). As a result of excessive use the number of serviceable engines has decreased by 30 per cent.

Carriages.—In 1913 there were 73 passenger coaches, 23 vans and mail vans, 635 goods trucks; total 731 carriages. To-day the number of vans and passenger coaches remains the same; on the other hand that of the goods trucks has fallen to 287. There is, therefore, a decrease of 348 goods trucks, which have been appropriated by the neighbouring States in the districts occupied by them.

Rolling-stock under Repair.

Locomotives.—In 1913, 18 per cent of the locomotives were under repair; this proportion has since increased to 30 % as a result of the lack of materials and the use of lignite, and it still continues to increase.

Carriages.—In 1913, the proportion under repair was 6 % to 7 %; at present owing to the reduced number of carriages, this percentage is 10 per cent.

Locomotives Required.—The present number should be increased by 30 %.

As regards wagons, the 348 which were taken away should be either returned or replaced.

Traction.

The speed and loading capacity have decreased from 30 to 60 % as a result of the scarcity of rolling stock and the use of lignite—by which only 2,500 calories can be produced—instead of coal. Consequently, communi-

cations are frequently interrupted, traffic is limited, and goods become congested owing to the impossibility of transporting them.

In the present circumstances the restoration of pre-war time-tables is out of the question.

Traffic.

In 1913, the daily traffic was as follows: the number of slow trains in each direction, between Sopron and Gyor, was 4; between Sopron and Eberfurt, 4; between Celldömölk and Eszterháza, 2; between Eszterháza and Pandorfalu, 3; as a result of the lack of coal, only a reduced number of slow trains are now running, and the position is as follows:

The number of slow trains in each direction daily, between Sopron and Gyor, is 2; between Sopron and Ebenfurt, 1; between Celldömölk and Eszterháza, 1 train three times a week; between Eszterháza and Pandorfalu 1 train three times a week.

On account of the reduced traffic we are compelled to use longer trains. For this reason, and on account of the bad quality of coal at our disposal, the speed has been decreased and the time taken in travelling increased to a very considerable extent. Delays are frequent and it is impossible to draw up a time-table adequate for our legitimate needs.

The goods trains service can only be carried out with great delays. From time to time the service has to be limited to the transport of food and fuel.

Traffic Returns.

The number of passengers conveyed between Gyor and Ebenfurt was:—

In 1913	1,005,575
In 1920	1,348,512

Between Celldömölk and Pandorfalu:

In 1913	273,038
In 1920	196,687

Between Gyor and Eberfurt: the amount of goods was:

In 1913	981,845 tons
In 1920	376,261 tons

Between Pandorfalu:

In 1913	274,965 tons
In 1920	74,815 tons.

Rates.

During and since the war we have been compelled on several occasions to raise our railway rates on account of the continual increase of the working expenses.

(a) *Passenger Rates.*—From July 1st, 1916, the State Railways increased their charges by 20 %. We adopted these increased State Railway rates on November 15th, 1917 ; on September 1st, 1918, we raised our rates as follows : from 1 to 20 km. 50 % increase, from 21 to 40 km. 40 % increase, from 40 to 100 km. 25 % increase, from 101 to 130 km. 20 % increase. On June 15th, 1919, our passenger, luggage and express goods rates were increased by 200 %, and on July 1st, 1920, we again increased our passenger and luggage rates by 100 % ; on August 11th, 1920 the express goods rates were increased by 400 % ; finally, on August 25th, 1920, we adopted without modification the passenger and luggage rates of the State Railways, increased by 300 %.

(b) *Goods Rates.*—In consequence of the imposition of the war tax on railways, we increased our rates on February 1st, 1917, by 30 % ; on January 1st, 1918, we increased fast, slow and wholesale goods rates by 50 %. Moreover we have imposed supplementary rates for working expenses amounting successively to 50, 30, and 16 hellers for each increase of 100 kg. In addition railway rates in respect of classification of goods were progressively increased ; on September 1st, 1918, all rates were raised by 70 %, except those for the transport of coal, which were only raised by 40 %. Supplementary rates for working expenses were abolished, but all rates were successively increased by permanent additional increases of 25, 15, and 8 hellers for each increase of 100 kg ; on June 16th, 1919, all rates were increased by 200 %, and on July 1st, 1920, they were further increased by 100 %. Finally on August 25th, 1920, we adopted, without modification, the State Railway rates, increased by 200 %.

The following table shows a comparison of rates in 1919 and in 1920 :

	Price of tickets		
	I cl.	II cl.	III cl.
	crowns.		
For 1913 per 100 km.	5.50	3.60	3.40
" 1920 " 100 "	162.—	93.—	54.—

Charges for carriage of goods :

Price per 100 kg. in hellers :

	Fast Traffic	Cl. I	Cl. A	Cl. III	Special for coal
For 1913 per 100 km.	326	181	99	39	39
" 1920 " 100 "	13.284	7.404	2.548	1.056	1.092

Financial Position.

Although receipts have increased by reason of the repeated rise in rates, and also owing to the considerable increase in traffic, it has not been possible to profit by this advantageous situation, in view of the insufficient rolling stock at our disposal and above all on account of the scarcity of fuel.

Moreover, the necessary expenditure on staff and plant increases daily in proportion to the increase of receipts. The efficiency and the minimum standard of living of the staff cannot be maintained, even partially, except, by means of continual increases in salary, in view of the fact that the conditions of life are becoming more and more difficult, chiefly on account of the increased price of articles of prime necessity (food and clothes).

As regards equipment, expenses caused by the continually increasing prices of all materials, and chiefly coal, are becoming a burden which we are less and less able to bear.

At present, the situation is such that, in spite of the increase in receipts, our business can only just cover expenses, and then only provided that only the most urgent repairs are carried out either to buildings or to rolling stock.

For the years 1919 and 1920 it has not been possible, for want of the necessary security, to meet the payment of the interest-bearing coupons even of the preference shares. However, as soon as the financial situation permits, coupons which have fallen due must be paid and also such preference shares as may be drawn by lot, and this will necessarily absorb the greater part of the cash reserve of the business.

In order to meet overdue payments and also those coupons which will fall due on April 1st next, a sum of 20 million crowns would be necessary.

Moreover, our enterprise will very shortly be confronted with other obligations.

As 348 of our wagons are in occupied territory, we are compelled, in order to ensure a service of trains, to make use of foreign wagons, for the hire of which we must pay several more million crowns.

Again, considerable sums are required to repair our stock and put it into working order.

An additional burden is anticipated, arising from charges to be paid for the exemption of railway employees from active military service, and this will cost about $1\frac{1}{2}$ millions. A further charge will be involved by the Government order for the increase by 15 % of the capital of limited liability companies; this will require a sum of $2\frac{1}{2}$ millions.

If we compare the financial results of the balance sheets for 1913 and 1920, we note that the receipts for 1913 amounted to 4,887,075.87 crowns, whereas those for 1920 were 48,230,024.26 crowns.

The expenditure for 1913 was 2,726,250.87 crowns, while that for 1920 was barely covered by the receipts.

Consumption of Fuel.

In the year preceding the war (1913) we consumed :—

235,634 q. of coal, value 361,396 crowns ;
2,029 cub. m. of wood, value 9,526 crowns.

In 1920, on the other hand, we used :—

375,583 q. of coal, value 12,882,570 crowns,
1,698 cub. m. of wood, value 201,497 crowns.

That is to say for 1920 our consumption of coal was greater by 139,449 q., equivalent to a value of 12,521,174 crowns, and although the consumption of wood was less by 331 cub. m., our expenses under this head were increased by 191,971 crowns.

The increase in the consumption of coal is not due to more extensive working, but to the following circumstance : whereas before the war we were able to obtain, at a low price, from the lost districts of Hungary or from abroad, coal possessing a power of 5,600 to 6,000 calories, in 1920 we had to be content with brown coal of poor quality and very often with lignite, obtained from what is left of the territory of Hungary and costing a very high price. With this fuel we can only attain a heat of 24,002,500 calories in the most favourable cases.

Supply of Materials.

It has been very difficult and sometimes impossible to obtain the necessary materials for the upkeep of our railway system.

Hungary to-day, deprived of her factories, forests and mines, supplies so few manufactured goods that she cannot meet her own requirements. This lack of materials, however, does not exist only in respect of manufactured products, but also of the necessary raw materials for the maintenance of the railway, since Hungary in her present mutilated state is incapable of supplying them. Consequently we are compelled to buy raw materials and manufactured products either from Austria or from more distant countries. As a result of the present rate of exchange, these purchases cause excessive expenditure to our business, and it became impossible to obtain goods or raw materials.

Hungary, in her dismembered condition, can only supply coal of small calorific value, wood fuel, and certain kinds of wood for the maintenance of the permanent way, while the better qualities of coal, iron, lead, mercury, tin, all iron objects such as rails etc., sleepers, special woods, cloth for uniforms, oils, paper, stuffing materials etc., must all be imported either from the lost Hungarian territory or from abroad.

Our reserve stocks are completely exhausted, so that we are compelled to buy materials to supply our needs from day to day. In view of the

continual increase in the prices of certain articles, these purchases have become almost impossible. In 1913, for instance, the cost of our daily consumption of coal amounted to about Kr. 990. In 1920 we had to expend Kr. 35,835, and in January 1921 as much as Kr. 61,154 per day, for coal alone. The proportion is the same in the case of other materials, and indeed sometimes it is even less advantageous.

D. POSITION OF THE KASSA-ODERBERG PRIVATE RAILWAY.

The details regarding the position of this railway are given in the table on the next page.

We would also point out that, as the Czechs occupied part of this line in November 1918 and the rest of it at the end of the same year, the general management of the railway has completely lost touch with the operating staff since that time.

Finally, from February last the management and operation of the railway passed completely into the hands of the Czecho-Slovaks, and we are therefore not in a position to supply details regarding the years following the war.

TABLE

giving details regarding the Kassa-Oderberg Private Railway.

1. *Extent of the System; Length of Lines.*

	1914-15	1915-16	1916-17	1917-18
	Kilometres			
Hungarian Lines	387,774	387,774	387,774	387,774
Austrian Line	64,248	64,248	64,248	64,248
Local Lines	283,912	284,069	283,428	283,428
Total	735,934	736,111	735,450	735,450

2. *Passenger Traffic.*

Number of civilian passengers carried.			
2,977,811	4,003,882	7,030,788	8,384,573

3. *Financial Position.*

	Receipts in Crowns			
Hungarin Line	19,881,614	29,918,999	32,273,737	41,168,750
Austrian Line	11,131,778	15,744,815	21,521,757	26,017,723
Total	31,013,392	45,663,814	52,795,496	67,186,473
	Expenditure in Crowns			
Hungaraian Line	17,778,088	22,944,207	28,195,476	39,186,433
Austrian Line	7,220,887	10,057,859	15,330,657	19,117,234
Total	24,998,975	32,982,066	43,526,133	57,303,667

Note :— The service begins on July 1st of each year.

4. Rates.

From November 1st, 1917, passenger rates have been increased by 60 % and goods rates have been increased on an average by 30 %.

From January 1st 1918, the following have been levied :—

A surcharge of 50 heller per 100 kilos for each consignment of fast traffic goods.

A surcharge of 30 heller per 100 kilos for each consignment of slow traffic goods below 5,000 kilos.

A surcharge of 16 heller per 100 kilos for quantities above 5,000 kilos.

5. Condition of Rolling-stock on June 30th, 1917.

Locomotives :—

Express Locomotives	33
Slow Locomotives	8
Fast Goods Locomotives	59
Slow Goods Locomotives	86
Locomotives for local lines	15
Total.	201

Tenders	186
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Coaches :—

Saloon Cars	6
Restaurant Cars	2
Passenger Coaches	253
Total.	261

Vans	145
Post Office Vans	22
Breakdown Wagons	5
Travelling Cranes	2
Covered Goods Wagons	931
Goods Trucks	5,741

Total.	6,846
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Snow-Ploughs	6
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Rolling-stock of the Cserbato Rack Railway :—

Rack Locomotives	2
Passenger Coaches	4
Open Goods Trucks	2

Rolling stock of the Gzacza-Zwarden Line :—

Goods Locomotives	4
Tenders	4
Passenger Coaches	6
Vans	2
Snow-Ploughs	1

6. *Numbers of personnel in 1917/18.*

Hungarian Line . . .	8,998 employees of all categories.
Austrian Line . . .	3,690 employees of all categories.
Total	12,688

II.

RIVER AND MARITIME NAVIGATION.

The length of navigable waterways in the countries of the Holy Crown of Hungary amounted before the war to 3,502 km. Of these the Danube accounted for 1,001 km., and next in order of importance came the Save, with 602 km.

The length of the Hungarian navigable waterways within the frontiers fixed by the Treaty of Peace has fallen to 1,400 km., of which 384 km. are furnished by the Danube ; of this distance 155 km. form State frontiers.

The Hungarian river craft in 1913 consisted of 164 steam-ships of 37,166 h. p., and 521 barges with a capacity of 121,171 tons. At the end of the war, on the sections of the lower Danube, a considerable number of these vessels fell into the hands of the enemy, and their future fate has not yet been decided. At present there are in the service of Hungarian concerns 88 steamers of 26,475 h. p. and 304 barges with a capacity of 121,171 tons.

In 1913, Hungarian river craft transported 2,181,013 passengers and 4,863,527 tons of goods. At the end of the war and during the subsequent revolutions waterway traffic was completely suspended for a long period. It was not until the end of the year 1919 that it began to revive slightly ; since then it has shown a certain amount of progress, but in view of its diminished tonnage and as a result of the lack of coal, it cannot rise to the former figure.

The growth of transport rates for river navigation is illustrated by the following example :— The rate for the most expensive class of goods between Budapest and Vienna was 300 deniers in 1913, 520 deniers at the close of the war, and 13,200 at the present time. The passenger fares in 1913 between Budapest and Vienna for the third class, which is the

cheapest, were 4 crowns downstream, 4.60 in 1913, 7 or 9 crowns at the end of the war, and 120 or 200 at the present time.

Hungary, before the war, was a maritime State. Its most important port, Fiume, had developed very considerably in recent years. In 1913, 13,975 vessels of 3,377,952 tons net entered the port of Fiume; in the same year import traffic amounted to 9,236,592 q. and export traffic to 11,738,827 q. The value of the imports was 213 million crowns and that of the exports 265 million crowns.

The war arrested the development of the Hungarian merchant service. At the beginning of the war 134 steamships of 142,539 gross tonnage were registered in Hungary. At the end of the war the vessels of the merchant service fell into the hands of the enemy and were of no further use to the commerce of the Hungarian nation.

III.

AIR AND MOTOR TRANSPORT.

Hungarian Aviation up to 1914.—Civil aviation has existed in Hungary since 1909. At Rakos a few experts, professors and engineers used to engage in aviation as a sport, both with machines manufactured under their direction and also with aeroplanes of foreign make. In 1909 the Hungarian Adorjan made his first flight in a Hungarian machine. Celebrated foreign aviators have also visited us. In October 1909, Bleriot appeared at Rakos and in 1910 an international meeting was arranged there.

Hungarian aviators have made great efforts to awaken public interest by flights in the provinces, especially around Lake Balaton, the object of their flights being to reach Austria.

After the beginning of the war Hungarian civil aviation, which was only in its infancy, was absorbed by military aviation.

After 1918.—After the fall of the Communist regime and the departure of the Roumanian troops, a civil undertaking was formed at Budapest, entitled the "Société Anonyme Hongroise de la Navigation Aérienne" (Hungarian Limited Liability Company for Air Navigation), with the object of developing local air navigation and of carrying mails and passengers.

On November 7th, 1920, this company began a service from Budapest to Szombathely; in December it began traffic with Szeged.

It possessed 20 machines.

At first this company was confronted with great difficulties arising from lack of necessary material.

The postal administration fixed the following rates for the carriage of air mails:

Letters up to 60 gr., 12 crowns. For weights in excess of 60 gr., per 20 gr., 3 crowns.

Postcards, 8 crowns.

Newspapers, 3 crowns; for more than 20 copies, 1 crown per copy.

No exact scale of charges was fixed for passenger traffic.

Number of letters carried: In November 1920: 16,028 letters, 10,004 postcards, 38,015 newspapers. In December 1920: 12,535 letters, 3,677 postcards, 27,256 newspapers.

Consumption of fuel per month: 2,500 litres of benzine.

Amongst foreign companies, the Franco-Roumanian Company received a concession to establish a line from Paris to Constantinople.

The Government is making efforts to establish an air post on the great international routes on the same lines as the American postal system.

Development of Motor Traffic in Hungary.

Motor traffic in Hungary had received a great impetus immediately before the war. The number of motor vehicles on the road was then about 3,000, including commercial vehicles and motor bicycles. Owing to the war and the Roumanian occupation, the number of these vehicles—particularly private cars—diminished very considerably, so that at the present moment the number of private cars, lorries and motor bicycles on the road is estimated at about 1,500 as a maximum.

Before the war the Royal Postal Service had long distance motor postal services, which dealt with the parcels post and passenger traffic. There were 14 similar services in Hungary, amongst them 10 continuous services (4 summer services) with a total length of 805.4 km., so that the average length of one route was 57.4 km. In 1913 the traffic on these routes was served by 32 vehicles which covered 505,560 motor km., and carried 49,654 persons. Besides this traffic, various individuals established motor services principally in the neighbourhood of watering places. At present there is no such regular service, for all the postal vans have fallen into the possession of the enemy during the various occupations.

The motor vehicles at present in operation are almost all of old manufacture; there are very few modern vehicles.

The reason for the small progress which has been made in motor transport in Hungary was that before the war the supply of horses was sufficient for the needs of the country, and horse-drawn traffic was at that time cheaper than motors, which had to be imported from abroad and required expensive fuel. At present any rapid development of motor traffic is prevented by the unfavourable economic situation and the bad condition of the roads. However, in view of the decrease in horses and the increased demands of agriculture, a rapid improvement is to be hoped for in spite of the difficulties enumerated above. The interest shown by commerce and the trouble which the Government is taking in this matter should enable us to regain the ground which has unfortunately been lost.

INDIA.

RAILWAYS.

GENERAL RESULTS OF OPERATION.

Appended is a statement illustrating the general result of the working of Indian railways in 1913-14, 1918-19 and 1919-20.

MATERIAL.

(a) *State of lines and equipment.* During the war it became necessary to restrict expenditure to the lowest possible limits, and great difficulty was experienced in obtaining the requisite supplies of material, with the result that the greater part of the necessary renewals and improvements on all lines had to be deferred. In addition to the normal arrears of wear and tear at the commencement of hostilities, the enormous wastage of the war years still remains to be made good. Indian railways generally are therefore, for the time being, much below the normal standard of maintenance, and it will be necessary to embark on a course of heavy expenditure before pre-war conditions can be restored.

(b) *Works to be carried out for purposes of reconstruction.*—Details are not available. The railway administrations are providing for urgent repairs and works of reconstruction on such system of priority as may be decided upon by the administrations themselves. The work of replacing some of the lines, aggregating 463 miles in length, which were dismantled during the war, has been undertaken this year.

(c) *Improvements and projects for new lines.*—A capital programme of Rs. 32,95,36,000 was sanctioned for the year 1920-21. This programme was designed to provide, so far as possible, for the improvement of traffic facilities on existing lines, urgently required to meet a rapidly expanding trade. It has only been possible, therefore, to allot a small amount for lines in progress and new construction. The actual sanctioned distribution of the programme grant is as follows:

Open line works	Rs. 11,23,73,000
Additional rolling stock	» 19,90,38,000
Lines in progress	» 86,75,000
New lines	» 94,50,000
	<hr/>
	Rs. 32,95,36,000

The extent to which the annual expenditure on capital improvements has decreased since 1914-15 will be seen from the appended statement.

(d) *State of rolling-stock*.—During the war considerable quantities of locomotives and other rolling-stock were supplied from Indian railways to Mesopotamia and other theatres of war ; details are given in the appended statement. In addition, great difficulty was experienced in obtaining from England even the material necessary for the upkeep of essential services, and the railway workshops in India were being utilized largely for the manufacture of munitions. The result is that repairs and renewals have, to a large extent, been deferred ; and the condition of the existing stock generally is considerably below the normal standard of maintenance. The armistice did not, however, find the Indian railways unprepared, as from 1916 onwards they had been compiling in order of urgency indents of requirements from outside sources for a period of three years after the war. They were thus able to take action at once towards securing the supplies of which they stood most in need, and orders for a large number of engines, coaching stock and goods vehicles have been placed. In addition to renewals and replacements, a capital expenditure of Rs. 19,90,38,000 for the supply of additional stock was sanctioned in the programme of 1920-21.

TRAFFIC.

Train mileage. — *Numbers of passengers and tonnage of goods carried.*—Statistics are contained in the appended statement.

TARIFFS.

(1) *Increase of passenger fares.*— In March 1917, in order to discourage unnecessary travelling, it was decided that on all the principal broad-gauge lines the third-class fare should be advanced to the existing maximum, and on others where the ordinary fare had been only two-thirds of the maximum, that it should be advanced by 25 per cent. It was also decided has to increase the maxima of all classes to the following limits :

(a) The maxima of first and second class fares from 18 and 9 to 24 and 12 pies per passenger per mile respectively ;

(b) The maximum of the intermediate class fare from 4 ½ to 6 pies per passenger per mile for mail and fast passenger trains only ; and

(c) The maximum of the third-class fares from 3 to 4 pies per passenger per mile for mail and fast trains only.

Authority was given to railway administrations to increase fares up to these limits as circumstances rendered this necessary.

(2) *Increase in goods rates.*—The Freight (Railway and Steam Vessel) Tax Act 1917 (No. XIII of 1917), which was passed as a war measure and came into force on and from 1st April, 1917, authorized the levy of a surcharge of one pie per maund on coal, coke and firewood, and of two pies per maund on all other goods carried by orrail any inland steam vessel except in the cases noted below :

(a) All consignments of less than one maund in weight ;

(b) All goods which are carried for a distance of 10 miles or less ;

(c) Railway stores and coal carried for consumption on the home line ; and

(d) All goods which are the property of Government at the time on despatch.

In January 1920, it was further decided to raise the rate for the carriage of public coal from the coalfields in Bengal and Bihar and Orissa by approximately 5 per cent for long distance, and up to $7\frac{1}{2}$ per cent for short distance traffic.

FUEL.

(1) *Consumption and provision of each kind of fuel.*—The consumption on all the Indian railways of each kind of fuel for the years 1915-16 to 1919-20 was as follows :

	Foreign coal-	Indian coal	Wood	Oil
	Tons.			
1915-16	40,959	5,143,108	112,732	2,638
1916-17	13,162	5,489,443	119,218	6,796
1917-18	3,620	5,616,725	243,450	29,800
1918-19	964	5,880,165	335,499	48,014
1919-20	360	6,055,492	322,422	53,018

The question of utilizing for railway purposes certain classes of inferior coal available in India is being considered. Experiments with pulverized coal are being carried out.

The regular use of oil-fuel for locomotives on certain Indian railways continues. At the end of the current year there were on the North-Western Railway 129 engines burning oil-fuel.

(2) *Net cost of fuel.*—This varied considerably on the different railways. Thus the average price of Indian coal on the East Indian Railway in 1919-20 was Rs. 5.15 per ton, while on the South Indian the price was Rs. 20.89 and on the Burma Railway Rs. 29.63.

The average cost of wood fuel used on the different lines (including freight to engine-sheds) varied from Rs. 16.06 per ton on the Ambaji-Taranga Light Railway to Rs. 2.70 per ton on the Assam-Bengal Railway. That of oil fuel varied from Rs. 62.82 per ton on the South Indian Railway to Rs. 27.14 per ton on the Great Indian Peninsula Railway.

Full details, as far as these are available, are given in Appendix 14 to the Administration Report on Indian Railways for 1919-20.

Statement showing the general results of working all railways in India during the pre-war and post-war years.

Particulars	Years		
	1913-14	1918-19	1919-20
1. Mileage open at close of the year	34,636	36,616	36,735
2. Total capital outlay, including ferries and suspense, on open lines (in thousands) Rs. . .	4,95,08,64	5,49,74,45	5,66,37,77
3. Gross earnings, (") Rs. . .	63,58,56	86,28,68	89,15,32
4. Working expenses (") Rs. . .	32,92,94	41,80,17	50,65,65
5. Net earnings (") Rs. . .	30,65,62	44,48,51	38,49,67
6. Percentage of working expenses to gross earnings	51,79	48,45	56,81
7. Percentage of net earnings on total capital outlay	6,19	8,09	6,30
8. Coaching train miles (in thousands)	55,972	44,117	52,092
9. Goods train miles (") . . .	57,933	74,283	70,061
10. Mixed train miles (") . . .	34,581	34,240	34,169
11. Total, including miscellaneous, train miles (in thousands) . . .	156,276	158,588	162,161
12. Unit-mileages of passengers (in thousands)	16,614,068	18,039,577	20,614,612
13. Freight ton-mileage of goods (in thousands)	15,623,235	22,140,806	20,401,656
14. Number of engines	8,019	8,923	8,982
15. Number of coaching stock at end of the year	22,381	24,684	24,704
16. Number of covered wagons . .	107,911	123,914	126,675
17. Number of open wagons . . .	51,488	54,207	54,864
18. Number of timber trucks, including bolster trucks . . .	3,460	3,686	3,668
19. All other classes of wagons . .	7,585	9,296	9,431
20. Total goods stock	170,444	191,103	194,636
21. Number of passengers carried (in thousands)	457,718	459,732	520,027
22. Tonnage of goods carried (in thousands of tons)	82,613	91,161	87,630

The following figures will give some indication of the extent to which expenditure has been stopped and deterioration has occurred during the war.

Years	Figures in thousands of rupees.	
	Capital improvements	Rev. Renewals.
1912-13	14,84,42	2,81,47 *
1913-14	18,45,94	3,67,62
1914-15	17,14,96	3,29,97
1915-16	6,73,69	2,81,67
1916-17	2,96,80	2,20,22
1917-18	3,79,40	1,54,51
1918-19	6,23,18	1,99,86
1919-20	14,13,65	3,81,40

During the war the stock sent to war areas was :

Engines.....	223
Goods vehicles	5,093 **
Coaching vehicles.....	423 **
Brake-vans	129 **

The mileage of railways dismantled was 463.03.

* Special revenue expenditure.

** In terms of 4-wheelers.

ITALY.

I.

RAILWAYS.

The Italian Government gladly accepted the invitation of the League of Nations to contribute a statement on the vicissitudes experienced by the State Railways during the war, and to give an account of past and present efforts to repair the damage and deterioration caused by the war. The Italian Government accordingly submits to the Conference the following memorandum, which includes the information that, in its opinion, appeared most useful.

Condition of the Railway System.

Before the war the total length of standard-gauge lines which were worked by the Administration of State Railways was 13,640 km., of which 2,721 km. was double track. Although the lines were in good condition, they were only able to stand the abnormal, intense and hurried traffic involved by mobilization, by the operations of war and by demobilisation, owing to the intelligent efforts and continuous self-sacrifice of all the railway servants, who thoroughly realised to what an extent the success of their country's cause was dependent upon their efforts.

The requirements of the war, the intensity of the traffic converging upon the lines in the zone of operations, the increase in the number and length of the trains, the additional routes brought into use for the distribution of troops, material and supplies, made it necessary to undertake, both on the lines and in the stations (and solely for military reasons) numerous works and also certain new constructions which were of an extremely urgent character and at the same time of the greatest practical use.

The Montebelluna-Susegana line was laid and opened for traffic within a few months. The linking of this line with the Castelfranco-Montebelluna line was carried out in a very short space of time.

In order to increase the capacity of the various lines, the track was doubled in several sections, and connecting lines with single and double

track were constructed, having a total length of about 150 km. Several stations were enlarged, new stations were built, additional facilities were provided for loading and unloading ; the number of sidings for shunting trains and for serving the new or extended loading platforms was increased ; and additional sidings were laid for direct loading and unloading.

About 400 km. of track were fitted with the electro-mechanical block system. Central installations were provided for a total of 670 points ; signal apparatus and the safety devices necessary for new stopping places, besides signal boxes, sidings and extended crossings, were organised.

Several branch lines, with a total extent of some 20 kilometres were completed, connecting with tramways and waterways, in order to facilitate loading and unloading.

Sidings of a total length of more than 100 km. were laid for the service of large centres—such as Allied military bases and their connections with the railway—for the lines connecting with the parks, depots, aerodromes and for the military and auxiliary establishments.

Naturally, immense sums had to be devoted to all these works.

At the present moment the railway system worked by the State has a total length of 15,118 km., of which 3,412 are double track. These figures include 1,027 km. of the railways (of which 395 are double track) of the new Provinces Trentino-Julian Venetia, which were annexed to the Kingdom of Italy after the war.

Immediately after the Armistice the necessary steps were taken to carry out the work which was indispensable for re-starting traffic on the sections of railway which had been cut or damaged. In a very short time, thanks to the remarkable efforts that were made, and by means of temporary constructions, traffic was resumed throughout the system.

The next step was to begin the actual works necessary for the re-establishment of normal conditions. Many of these works have already been completed, but others which are of greater importance are still in process of execution ; it is hoped they will soon be completed.

Works and plans for the construction—directly chargeable to the State—of about 800 km. of new standard-gauge lines have also been undertaken. These works are intended to complete the railway system and to provide for the future needs of the traffic, so far as these can be foreseen. The works for the purpose of extending electric traction are deserving of special mention ; the State Railway Administration has decided to develop these works considerably and has drawn up a general programme which involves the electrification of 6,000 km. of track.

The lines which had already been electrified on June 30, 1914, had a length of 300 km. ; approximately 950 million kilometric tons were carried over these lines during the year 1913-14 ; on June 30, 1920, the total length of these lines amounted to 460 km. ; approximately 2,350 million kilometric tons had been carried over this distance during the year 1920. In addition, on June 20, 1920, the electrification of an additional 200 km. of track was being carried out.

Condition of Rolling-stock.—Before the declaration of war, *i.e.*, June 30th, 1914, the supplies of rolling-stock of the standard-gauge system were as follows :

Locomotives, steam and electric	5,305
Carriages	10,078
Luggage vans	3,641
Goods trucks	103,070

On June 30, 1920, these figures were as follows :

Locomotives, steam and electric	5,734
Carriages	10,071
Luggage vans	4,061
Goods trucks	132,518

These figures include the material of the new lines which had been added to the railway system (1,027 km.).

However, for reasons which are not far to seek, the situation as regards the working of the railway system is not very satisfactory, in spite of this apparent improvement.

The intensive employment of rolling-stock, and particularly of locomotives, during the war inevitably increased the percentage of material which became unfit for service. This has been found to be the case not only on the Italian railway system but on the railway systems of all countries which took part in the war.

The difficulty of the situation was also aggravated, after the Armistice, owing to the diminished output of labour—a circumstance which is also common to all countries.

In fact, as regards the different kinds of rolling-stock, the percentage which had become unfit for service on June 30th, 1920, as a result of damage was increased, in comparison with the figures for June 30th, 1914—taking into account the respective supplies of material—in the following proportion :

Locomotives	11.3 per cent.
Carriages	7.4 " "
Vans	2.7 " "
Goods trucks	5.6 " "

Traffic.—The following movement took place over the Italian railway system during the year which directly preceded the declaration of war :

73 million train kilometres for passenger and mixed trains.

45 million train kilometres for goods trains.

During the war, as strict economy of fuel was necessary, and as it was important to find means (locomotives and carriages) to run numerous military trains, it was necessary to make drastic reductions in the number of passenger trains. Indeed, the distance covered by these trains (with the exception of those intended for military transport) actually fell to a minimum of 24 million km. during the year 1918-19.

But once the war was over, and when the requirements of the demobilisation of the army had been provided for, it was possible for a great number of passenger trains to start running again ; this raised the distance covered during the year 1919-1920 to 43 million km.

These distances are still very much below the 73 million km. for the year which preceded the war, but the difficulties of coal supply are an obstacle to an increase in the future, without mentioning considerations of economy, to which very great weight has to be given under the present conditions of the operation of the railways.

To form an estimate of the present movement of passengers over the Government railway system, one may take as a criterion the receipts, which were 228 millions in 1913-14 and, in 1920, 625 millions (without taking into account the receipts for the railways of the Trentino and of Julian-Venetia or from the military transports).

However, in order to compare these receipts, it is necessary to deduct from the figures for 1919-20 the increases in the railway rates introduced during the last few years ; in this way we arrive at a total of 325 millions.

Strictly speaking, even these latter figures would not, when compared with the 228 millions for the year 1913-14, give an exact idea of the change which has taken place in the transport of passengers ; in 1913-14 there were, indeed, special reduced rates in force (for return tickets, season-tickets, etc.), which were abolished during the war and had not yet been introduced in 1919-20.

However, even when these factors are taken into account, it is possible to state, in a general way, that the movement of passengers over the Italian railway system recorded in 1919-20 was greater than before the war.

As this heavier traffic has, of course, been carried on by running a smaller number of trains, the result must be—and in fact it is so—that the rolling-stock has been more exhaustively employed, so that the limits which, in the long run, are admissible for the working of the lines under normal conditions are exceeded.

In contrast to what happened in connection with passenger trains, the movement of goods trains increased during the war.

The number of kilometres covered in 1913-14 was 45 millions ; this figure rose to 58 million kilometres in 1916-17, without taking the movement of military trains into account ; in the last period, that of 1919-20, a total of 47 million kilometres was reached (without including the movement of trains in Julian-Venetia and the Trentino).

This increase in the number of trains is not due to the transport of a greater quantity of goods, but to the increase of the distance over which these goods had to be carried, as a result of the far-reaching changes effected by the war in traffic routes.

In fact, the total tonnage of goods carried during the year 1913-14 reached 41.4 millions of tons, a total which was never equalled in the following years, during which it varied from 37.7 to 40.5 millions of tons.

On the other hand, the average movement of each trainload, which amounted to 178 km. in the year 1913-14, reached a maximum of 315 km.

in 1917-18, and in 1919-20, *i.e.*, when the military transport due to the war had almost entirely ceased, it still amounted to 270 km.

The kilometric tons of goods transported amounted to 7,385 millions in 1913-14 and to 10,702 in 1919-20.

As will be seen, the increase of kilometric tons is proportionately greater than that recorded in the movement of trains (47 million kilometres in 1919-20, as compared with 45 millions in 1913-14).

This result was obtained principally through the increase in the percentage of transport worked by fully loaded wagons (85 % in 1919-20 as compared with 65 % in 1913-15) and also through the decreased percentage of empty wagon traffic (18 % in 1919-20 as compared with 22 % in 1913-14).

Increased Rates.—Before the war the average kilometre rate for single and return journeys (without counting travelling at reduced rates for certain classes of persons) was 0.0636 lire.

During the war, besides the abolition of return tickets, which resulted in an increase in the average price per kilometre, rates were gradually increased, so that at the end of 1918—the time of the Armistice—the increases in rates were, as compared with pre-war figures, about 65 % for 1st and 2nd class and 45 % for 3rd.

As a whole, the average price per kilometre in 1918 was about 0.10 lire, which, compared with pre-war figures mentioned above, represents an increase of 67 %.

At the end of 1920 these increases were, as compared with pre-war figures, about 230 % for 1st class, 210 % for 2nd class and 170 % for 3rd class.

With regard to goods rates, the kilometric bases before the war kept near an average of 0.10 lire per kilometric ton for express traffic and 0.05 lire per ton-kilometre for slow traffic.

During the war these rates underwent gradual increases rising to 40 % ; after the Armistice the increases rose to 300 % for most goods, with the exception of a few common articles of general consumption and also mineral fuel, in respect of which the increase was 200 %.

Before the war the State Railway Administration employed for train-haulage purposes best quality Cardiff coal in lumps only.

During the year 1913-14, the consumption amounted to 1,600,000 tons of coal in lumps and about 600,000 tons of briquettes.

Most of the coal came from the coal-fields of Cardiff and Newport, and small quantities were beginning to be imported from America.

A small proportion of the briquettes was of foreign manufacture, but they were for the most part Italian ; they were made with fine coal from Cardiff and Newport.

In 1913-14, the average consumption of fuel on locomotives was 5.39 kg. per 100 kilometric tons carried.

But in recent times the State Railways have been obliged, owing to difficulties of supply, to accept coal of any quality — largely “through-and-through” and fine coal, which, when used in ordinary fire-grates, causes considerable waste and also contains a large proportion of ash.

This explains the largely increased unit of consumption of fuel on locomotives during the past few years ; in 1919-20 this consumption amounted to 6.36 kg. per 100 kilometric tons carried.

In 1919-20 the total consumption for train-haulage and accessory services (heating, work-shops, etc.) amounted to 3,400,000 tons, the details of which are as follows :—

Coal in lumps and fine coal	2,112,000 tons
Briquettes	1,025,000 "
Lignite	108,000 "
Wood	55,000 "
Special kinds of fuel.	80,000 "
Steamship fuel	20,000 "

Naphta is included among special fuels ; it has been used experimentally with a view to ascertaining whether it could be consumed in locomotive fire boxes in conjunction with solid fuel.

The average price of fuel consumed in 1913-14, which consisted solely of anthracite, was 36.33 lire per ton. In 1919-20 it was only the use of a large quantity of auxiliary fuel which prevented the price of fuel from exceeding 397.45 per ton ; the price of anthracite increased to a maximum of 695 lire per ton in November 1920.

Financial Position.—The excessively high price of coal constitutes one of the most serious obstacles to the resumption of normal transport conditions in Italy, and it is to be hoped that this exceptional situation will terminate as soon as possible.

Immediately before the war, in 1913-14, the ordinary receipts from the working of the railway system alone amounted to 575 millions, and the ordinary expenditure to 464 millions (including 283 millions for staff expenses).

Under the terms of the laws regulating the administration of the State Railways, this administration should, out of its own Budget, meet the expenses incurred for replacement of plant and rolling-stock, extraordinary expenses for the upkeep of the lines, payment of certain fixed capital expenditure and other so-called accessory expenses. The net difference between the receipts and expenditure indicated above, together with that arising from the working of other auxiliary services, is paid annually by the Railway Administration to the Treasury.

In 1913-14 this payment amounted to 28 millions. In 1919-20 the receipts were 1,797 millions (not counting receipts from the new provinces) and the expenditure amounted to 2,590 millions (including 1,173 for staff expenses).

Instead of making an annual payment to the Treasury, as had been the case before and even during the first years of the war, the Administration drew up its budget with a deficit of 860 millions.

The co-efficient of railway traffic had been continually decreasing until 1913-14, when it reached a figure of 76.76 % ; it then rose again

during the following years as a result of the war and its consequences ; in 1919-20 it reached 133.81 %.

Finally, in the case of Italy as in that of the other countries affected by the war, like causes have produced like effects. The crisis is shown in the enormous increase in charges and the grave difficulties in operating the railways, due to wear and tear of material and plant.

However, Italy intends to face all her difficulties and is fully aware of what is needed to restore as rapidly as possible the conditions necessary for the resumption of commercial relations between peoples. She will not neglect any means to attain this end, and hopes that other countries will pursue the same object.

She desires to affirm, however, that the lack of fuel from which she is suffering will not permit her to regain a completely satisfactory position until her present heavy expenditure on coal is again reduced to tolerable dimensions.

Railway System granted to Private Enterprise.

It is well known that, as regards railways, a dual administrative system exists in Italy—on the one hand, a State system for the main lines ; on the other, a local or district system granted, by concession, to private enterprise.

This system, which, about the middle of 1916, included in all 4,700 kilometres of lines already in operation and 1,050 kilometres in course of construction, has been subjected to a very serious crisis due to the war, in the first place as a result of the excessive cost of construction, which arrested the promising development of the railway system, and also gave rise to great difficulties with regard to work in course of construction ; and in the second place, in respect of difficulties of operation, as a consequence of the increased wages of employees, difficulties in the supply of materials and the coal crisis. This crisis has necessitated the use, to a very considerable extent, of varieties of fuel produced at home, such as lignite, peat and wood, which in turn have caused a greater wear and tear of haulage stock (especially boilers).

At present, by means of special legislation with a view to reconciling the demands of the system conceded to private enterprise with the change in economic conditions, efforts have been made as a first step to complete the lines begun before and during the war, and then to carry out such new constructions as appear most urgent. The first results of these measures have already been realised, so that in addition to the resumption of the construction of various lines in different districts, a fresh and vigorous impulse in construction may be noted, which affects about 300 kilometres of lines belonging to the railway systems of Calabria and Lucania. The full development possible for this system amounts to about 1,200 kilometres, which, when completed, would represent a considerable increase in the figures for the above-mentioned lines conceded to private enterprise. Similar

measures have also been taken in the case of tramways outside urban areas (inter-communal tramways), the present extent of which, when the urban tramways are added to it, amounts to about 6,000 kilometres.

Legislation is also being considered with a view to the electrification of the system conceded to private industry involving a considerable economic contribution by the State and the granting of various facilities. This scheme has already made great progress.

In view of the grave crisis in which railway stock is at present involved, precise data regarding the situation of rolling-stock could only be furnished after the most careful investigation which it is impossible to carry out in a short space of time.

II.

INLAND NAVIGATION.

The development of inland navigation in Italy, particularly in the last few years, has shown more and more the necessity of restoring the existing navigable waterways and of constructing new ones, and also of making connections in order to constitute an uninterrupted system of navigable waterways covering the whole country.

In pursuance of the law of January 2nd, 1910 (No. 9—text of January 13th, 1913, No. 959, laying down new regulations for inland navigation), the Government has, since 1911, drawn up and secured approval for a list of the most important navigable waterways; these have since been supplemented by two other lists which were approved in May 1917.

In respect of the classification made in accordance with the importance and intensity of traffic, the following waterways, which are already open for traffic or will shortly be open, require special mention:

- (a) Milan—Venice;
- (b) Waterway to Lake Maggiore and Lake Como;
- (c) Turin—Savona;
- (d) The navigable system of Venetia considered as a whole;
- (e) Lake Garda—Peschiera—Mantua—Po;
- (f) Po—Bondeno—Ferrara—Primaro;
- (g) Po—Porto-Corsini;
- (h) Leghorn—Pisa—Pontedera—Florence and the Leghorn—Pontedera branch;
- (i) Terni—Orte—Rome—Tyrrhenian Sea.

These waterways, to which must be added the various secondary branches which are connected with them and all the other waterways smaller in size and importance, constitute the general system of inland

navigation in Italy. For some years past the Government has given the matter more and more attention. It is, in fact, aware of the inestimable advantages from the point of view of economy and transport which the nation will derive from this system if worked to its fullest capacity.

In accordance with the programme of the various works to be undertaken, which enumerated them in order of importance, and provided that they should be executed with the least possible delay, considerable credits were granted—particularly during the war and the period which followed it—for the construction of the Milan—Po Canal (entrusted to the administration of the Port of Milan), for putting into working order the intermediate section of the Po between this canal and the sea, for the acquisition of powerful dredgers to be used on the river, and for putting into working order the principal canals of the navigable system of Venetia.

The longest and most important inland navigable waterway is that which, passing *via* the Brondolo—Po Canal from Venice, connects the Venetian Lagoon with the Po. This was constructed during the war with the co-operation of the army services, and is now almost finished. It will utilise the course of the River Po, from the junction of the Po and the Adda, by means of an artificial channel about to be constructed, and will finally be continued to Milan.

The total length of the Po—Brondolo waterway is 20 kilometres.

It can thus be said that the Po is already connected with the commercial port of Venice, the industrial port in construction at Bottenigo and the ports of Malamocco, Palestrina and Chioggia, by a navigable waterway available for vessels of about 1,000 tons,

From Venice this line will link up the Venetian system as far as Sdobba, Trevisa and Padua. This system was improved during the war and the work of improvement is still being continued.

The navigable system formed by the rivers and canals of the Venetian region has a length of 1,400 kilometres, of which two-fifths consist of sections of river or sea, and three-fifths of canals in the lagoon and of canals in the interior. The connections provided are as direct and complete as could be desired; the outlet of the whole is in the lagoon-part of Venice.

(1) The Venetian Coast route, from Venice to Grado, crosses the following navigable rivers near their mouths; the Sile, the Piave, the Livenza, the Lemene, the Tagliamento, the Stella, and the Corno.

(2) Similarly, the route which follows the coast and connects Padua and Venice with the Po crosses near their mouths the Brenta, the Bacchiglione, the Gorzone, the Adige, the eastern and main branches of the Po.

(3) The route Venice—Padua—Vicenza crosses the navigable canals of Mirano, Novissimo, Battaglie, and Brentella.

The Po, which is naturally available for vessels of large tonnage (600 tons), will serve as a link between Cavenello, at the mouth of the Mincio, and the Volano Canal; this will make it possible to reach the Comacchio Lagoon *via* the Ponte lagoscuro—Ferrara—Volano Canal (which is now under construction) and also to reach Mantua by the Mincio, through the Governolo dock, which is under construction. This dock, which is designed

for vessels of 1,000 tons, will make the Mincio accessible to large vessels. Thus barges of considerable tonnage will soon be able to reach the port of Mantua, which is already the centre of a considerable quantity of water-borne trade and which will witness a still greater increase of this trade when the new dock enables goods to be transported between Venice and Mantua by vessels of large tonnage.

Owing to permanent works, already begun, for regularising the river-bed, and also to the sustained activity of a fleet of dredgers, seven in number, the Po, from the point where it is joined by its junction with the Adda, will have a permanent depth of 2.50 metres of water, which will thus permit the passage of vessels of large tonnage. Three more dredgers are under construction in Holland, and others will shortly be ordered.

A canal, which will terminate at Rogeredo, is being commenced between the mouth of the Adda and Milan, the cost being estimated at from 225 to 250 million lire. On this elaborate system, stations have already been opened at Ponte lagoscuro, Ponte Catena (Mantua), Boretto, Casal Maggiore and Cremona. On the other hand, work has already been commenced on the ports of Milan, Pavia and Cremona, and plans have been drawn up for the stations of Ferrara, Piacenza and Migliaretto (Mantua) and also for the improvement of the ports of Boretto and Casal Maggiore.

Important works are in hand for the improvement of the Tiber, including the construction of a port at Ostia, a navigable channel connecting the capital with the sea, and also the renovation of the Navicelli Canal connecting Pisa and Leghorn.

A vast scheme is under consideration and will shortly be put into execution for canalising the Mincio, for utilising the waters of Lake Garda and for establishing an important line of inland navigation from the Trentino to the Adriatic, and for constructing the inland waterway Modena—Bondeno—Po, and Po—Porto Corsini.

Schemes for establishing communications by water between the port of Milan and Lakes Maggiore and Como are also in preparation. The political and economic importance of this plan is obvious, since many national and international problems are bound up with it.

The foregoing facts show the progress that Italy has already made, and also what she hopes to achieve in order to solve in the best possible way the complex problem of inland navigation.

This fact has become even more evident in view of the increase of trade in the principal centres of Italy during these last years, since the obvious advantages to be derived from the development of navigation have been experienced there for some time.

According to the information contained in the summary of the report, by the President of the Technical Executive Committee on Inland Navigation published in 1908, the length of the Italian waterways amounts to 4,847 km., 3,036 of which are already navigable. The remaining 1,811 km. have still to be rendered navigable.

Of these 4,847 km., 1,372 are navigable for vessels of 600 tons, 1,948 for vessels of 250 tons, and 1,527 for vessels of less than 250 tons.

Recent information is not available regarding transport traffic on the Italian waterways. The figures given below refer to the pre-war period, particularly to the year 1913:

Lakes	939,150 tons, 12 %.
Valley of Padua	5,645,553 » 60 %.
Valley of the Brenta	560,410 » 7 %.
Valley of the Piave and the Livenza	1,166,340 » 15 %.
Arno	304,670 » 4 %.
Tiber	90,447 » 2 %.

Total : 8,706,570 tons

During the war, traffic on the waterways certainly diminished to a very great extent ; however, at the present time it is not only tending to regain its previous importance, but is also responding to the vigorous impulse caused by the improvement in the conditions of navigation, due to the work which has recently been carried out and also to more perfect departmental organisation.

III.

MERCANTILE MARINE.

Pre-war Tonnage.—At the beginning of the war, on December 31st 1914, Italy had 644 Italian vessels of a total gross tonnage of 1,958,838 tons, and, in addition, 69 vessels which had belonged to the Austrian State or Merchant Service and had been sequestered since the war, with a total gross tonnage of 370,236 tons, making in all 713 vessels, and 2,329,074 tons¹.

Employment of the Fleet.—Of all the national services, the Italian Merchant Service was the one which, during the war, was subjected to the heaviest strain in keeping up the supply of indispensable products and war material. Italy's small tonnage was gradually drafted into State service, beginning with large steamships, and going on to smaller steamers and finally to sailing vessels.

¹ Among the measures adopted by the Government with respect to navigation and ocean transport, the first and most important was the creation in February, 1916, of the Central Commission for Sea-borne Traffic, which was responsible for :

(a) providing for the transport by sea of material belonging to the State and shipped in foreign ports ;

(b) exercising the necessary supervision to ensure that non-requisitioned vessels should be employed exclusively in the national interest ;

(c) checking the requirements of the chief industries in order to use Italian tonnage in proportion to these requirements.

First of all merchant vessels were employed, and subsequently passenger steamers and transatlantic liners.

Requisitioning.—As long as possible it was the duty of the State to limit requisitioning, which became more and more necessary as the result of the ever-increasing shortage in the world's supply of shipping. There were two main systems of requisitioning: requisitioning by time, and requisitioning by ton-mile.

Rates of Compensation for Requisition.—The rate of compensation per ton-mile was settled so as to correspond with that of requisitioning by time, in accordance with a sliding scale, which took into account the origin of the cargo—there were three zones (England, North America and South America)—the place of destination, and the tonnage of the vessel. A distinction was drawn between cargoes of corn and cargoes of coal.

In the case of steam tugs, compensation was determined according to horse-power. As regards sailing vessels, motor boats, and lighters of all kinds, direct agreements were entered into between the local authority and the owner.

Advantages of the two Systems.—The advantages of these two systems from the ship-owners' point of view are obvious.

Requisitioning by time guaranteed the ship-owner a fixed monthly compensation but left him no control over the vessel, which was under the management of the State.

Requisitioning by ton-mile, on the other hand, encouraged the ship-owner to make a better use of available tonnage; it was to his advantage to secure a cargo for the return voyage, and to expedite loading and unloading and so reduce the time taken on voyages. So long as working conditions remained normal, or nearly so, requisitioning by ton-mile was applied on a large scale, especially for long voyages, but the rise in working expenses, together with the increasing difficulties of navigation, and the obligation to follow definite routes for reasons of safety, made it impossible to secure the fullest use of the vessel under the ton-mile system. This system was then applied in fewer cases, and finally abandoned. All vessels were subjected to the system of requisitioning by time.

Increase in Rates of compensation for vessels requisitioned by time.—Owing to the increase in expenses, it was necessary to raise the rates of compensation. The first increase was fixed by a decree of the King's Lieutenant, dated May 17th, 1917 (No. 845), followed by the decree of August 18th, 1918 (No. 1149), which made a distinction between voyages beyond Gibraltar or Perim and those in the Mediterranean and Black Sea. This decree also laid down the rates per gross ton per month, regard being had to the above distinction. The decree of the King's Lieutenant dated August 18th, 1918 (No. 1149), fixed the monthly compensation, while retaining the distinction between voyages in the Mediterranean and Red Sea and voyages beyond Gibraltar and Perim. It used as a basis a formula

which took into account the gross tonnage of the vessel, its dead-weight, its age and, indirectly, its value.

Finally, by a decree of the King's Lieutenant dated March 30th, 1919 (No. 502), a fixed monthly compensation per gross ton was adopted.

For other types of vessels, the previous figures, subject to a few modifications, were taken as a basis.

Other Methods of chartering Vessels.—The system of requisitioning by time, which was applied on a large scale, gave good results. It was supplemented, however, by further measures taken as and when they became necessary.

Compulsory Voyages.—By a decree of May 31st, 1916 (No. 646), it was enacted that, in order meet the urgent needs of public administrations other than those of the State, and the requirements of services or businesses carrying on work in the public interest, the compulsory carriage of coal, benzine, grain, sugar, phosphates and other raw material could be ordered.

The Government made wide use of this power, and extended the rule as to compulsory voyages to all types of vessels. As a result of this auxiliary system, it was possible to meet urgent requirements which could not have been provided for by requisitioning alone. In this way also, associations of traders, organisations and other auxiliary establishments were able to secure material with which the State could not have supplied them.

Requisitioning of the Holds of Vessels.—The same decree empowered the Government to requisition the holds of Atlantic liners, which were thus used as cargo boats.

Mixed Cargoes. — A special system of mixed cargoes of metals and cotton was also adopted in June 1916.

A few experiments were made with mixed cargoes of metals and cereals, but they were not followed up.

Mixed cargoes were abandoned at the end of 1916 owing to the more urgent need for products other than cotton, and because of the excessive length of the voyages which the vessels had to make in order to load at different ports.

Shipping subject to special obligations.—A few companies which were under contract to supply the State with certain war stores, the raw material for which had to be imported from abroad, fitted out ships on their own account, or retained the use of the tonnage which they already owned.

In accordance with the same principle, which had given rise to compulsory transport for auxiliary establishments, it was decided to leave in the hands of these commercial bodies the vessels which they required to maintain their supplies, on the express condition, however, that this

tonnage should be employed exclusively for the transport of raw materials (coal, metals, oils, minerals, etc.). This measure was applied especially to ships of the Ansaldo and Ilva Company, and later to the following companies :— *Società Nazionale di Navigazione, Lloyd Mediterraneo, Società Italo-Americana per il petrolio.*

Liberation of Small Vessels.—At the end of the war, the whole sailing fleet was freed from requisitioning, together with ships of less than 300 tons burden. Those under 500 tons were liberated next, and finally, ships of less than 2,000 gross tons. Only a few of the last class remained under requisition for military service on the coasts, or for trade with Lybia, the Adriatic, Albania, Rhodes, and the Black Sea, and also for the shipment of special commodities such as cements, pozzalana, stores, etc.

Fixed Freights.—This measure was adopted with a view to the resumption of normal maritime traffic, and for the same reason a new type of contract, called the "Fixed Freight Contract", was adopted in October 1919.

The main feature of the contract is the carriage of goods for a sum which is fixed in advance and varies according to the place from which the cargo comes and its destination. It leaves the management of the vessel in the hands of the owner, and gives him the right to take cargoes on the return voyage, but in this case the State formerly reduced its freight-payment by 10 per cent. as a set-off against the return freight received by the ship-owner. Subsequently the total amount of the compensation was left to the ship-owner without any percentage being deducted by the State. At the outset, the system of fixed freights (applied at the request of the individual ship-owner), payment being made not according to the tonnage of the vessel, but according to the amount of the cargo and the nature of the merchandise carried, was favourably received. But this feeling only lasted as long as the freight rates established under this system remained proportionately higher than the compensation for requisition.

When these freights, which were fixed for a specified period, fell below the compensation for requisition, while the shipowner remained responsible for managing the vessel and for all the expenses connected therewith (including, except for certain privileges on the first voyage, the cost of coal), most shipowners, who had asked for the fixed freight system, requested to be put back under requisition by time.

Two year Charters.—By a decree of the King's Lieutenant dated August 18th, 1918, No. 1149, the State chartered for two years ships of the national mercantile marine which had been recently acquired or built.

This represented a fairly large and valuable accession of strength, for 18 vessels of a total gross tonnage of 64,930 tons were chartered.

Available Shipping.—At the end of 1919 the position of the national fleet under State control was as follows :

		Gross tonnage
Number of vessels requisitioned	103	331,363
" " " under the fixed freight system	27	150,343
" " " under time charter	18	64,000
" " " employed by regular lines	10	63,460
" " " employed by subsidised lines	65	168,502
" " " passenger vessels (Atlantic liners).	19	93,415

Number of non-requisitioned vessels.

(1) subject to no restrictions	50	328,225
(2) reserved for special services and transport	40	179,546
(3) freed from requisition as being under 2,000 tons gross	99	53,349

Totals : 431 1,434,403

Monthly Averages of Imports.—The monthly average of the total imports carried in Italian merchant vessels chartered from 1915 to 1919 was as follows :

1st half year	1915	monthly average	import.	Tonnage	1,365,968
2nd " " "	1915	"	"	"	1,345,483
1st " " "	1916	"	"	"	1,349,900
2nd " " "	1916	"	"	"	1,212,023
1st " " "	1917	"	"	"	893,069
2nd " " "	1917	"	"	"	893,449
1st " " "	1918	"	"	"	789,406
2nd " " "	1918	"	"	"	978,988
1st " " "	1919	"	"	"	1,067,378
2nd " " "	1919	"	"	"	1,201,320

Chief Cargoes.—The chief cargoes carried by sea during the years 1917, 1918 and 1919 were the following :

	1917. T.	1918. T.	1919. T.
Coal	4,991,328	3,590,789	6,851,456
Grain	2,563,855	3,734,916	3,716,089
Frozen meat	95,825	166,228	88,661
Metals	1,220,368	915,567	551,326
Cotton	152,962	118,397	160,489
Mineral oils	459,433	713,287	489,862
Goods of various kinds	1,435,345	1,371,191	1,754,307

Management of Vessels in special cases and co-partnership Voyages.—By a Decree of August 10th, 1918 (No. 1149), the State was authorised to entrust shipowners with the management of vessels which it had bought ; a preference was given to shipowners who had lost their vessels as a result of the war. The State was not the owner of the vessels which had been

purchased but merely of those built under the law of April 5th, 1908 (No. 111), for the lines controlled by the State, and of vessels sequestered and captured from the enemy during the war. For this reason it granted the right of management and joint operation of certain of the latter vessels to private concerns.

These vessels are :

Alberto Cavalletto
Brescia
Catania
San Giusto
Ferdinando Palasciano

Angelo Brunetti
Carlo Pisacane
Fratelli Bandiera
Tortona
Pesaro

which are managed on behalf of the State by concessionary companies in return for a guarantee and the repayment of expenses according to the class of vessel and the importance of the service which it performs.

Regular Lines.—These concessions were specially granted to companies which had proposed to found regular lines and had not sufficient tonnage at their disposal. The State was thus able, after the war, to establish the following regular shipping lines :

Northern Europe—Italy—Levant: Società italiana di Servizi marittimi ;

America—Italy—Smyrna: Società di Navigazione generale italiana ;

Northern Europe—Italy—Far East: Navigazione italiana ;

Northern Europe—Italy: Australia Lloyd Sabaudo.

The lines restored or established by employing privately owned vessels were :

New Lines :

1. Italy—Northern Europe—Australia (of high dead-weight tonnage, for mixed traffic) ;

2. Italy—Central America—Chile (commercial) ;

3. Italy (Trieste) New-York (commercial) ;

4. Trieste—South America (commercial) ;

5. Genoa—Havana—New Orleans—Mexico (commercial).

Lines which have resumed their sailings :

Genoa—New York (passengers, freight, mails) ;

Genoa—Philadelphia (passengers, freight, mails) ;

Genoa—Montreal (passengers, freight, mails) ;

Genoa—Brazil—La Plata (passengers, freight, mails) ;

Genoa—Panama—Valparaiso (passengers, freight, mails) ;

Genoa—Panama—Valparaiso (freight) ;

Genoa—Antilles—Mexico (freight) ;
 Genoa—Antwerp—Australia (mixed traffic and mails) ;
 New York—Italy—Levant—Black Sea (passengers, freight, mails) ;
 Trieste—New York (passengers, freight, mails) ;
 Trieste—Gulf of Mexico (freight) ;
 Trieste—Brazil—La Plata (passengers, freight, mails) ;
 Trieste—Brazil—La Plata (general merchandise and goods in cold storage) ;
 Genoa—Philadelphia ;
 Genoa—Canada (passengers and freight) proposed ;
 Circular Genoa—New York *via* Naples—Smyrna—Constantinople—
 Constanza—Naples—New York, of great political and commercial importance.

Thanks to calls at ports in Patras, Algiers and Spain, these markets will be linked up with the Italian and American markets by direct and important lines.

Abolition of Requisitioning.—By a decree of the King's Lieutenant dated July 29th, 1920 (No 1135, Annex 1), the Italian Government stopped the requisitioning of vessels in order to promote overseas trade directly interesting the country and in order that shipowners might once more take their part in the national economic development. The freedom given to shipowners and to shipping is still conditional on the needs of the State and the fulfilment of contracts to supply the country with the necessities of life and other goods essential for the industrial development of Italy.

The military and political character of certain services renders it necessary to maintain complete control over the fleet, and the State continues to requisition a few vessels of small tonnage for use in the Mediterranean. The Government, however, intends to remove all restrictions from the Italian mercantile marine as soon as possible. With this end in view the State has handed over certain vessels to private persons or to private co-operative societies.

Shipping Losses during the War.—During the war Italy lost 267 vessels of a gross tonnage of 781,387 and 1,046,386 tons, classified as follows:

	Number.	Displacement	d. w.
Cargo vessels	191	538,345	817,127
Mixed traffic vessels	51	122,815	139,696
Passenger vessels	20	113,401	79,588
Vessels of special type	5	6,624	9,975
Total :	267	781,385	1,046,382

The losses also included 376 sailing vessels of a displacement of 99,852 tons and a gross tonnage of 150,000.

The Existing Fleet.—On January 1st, 1920, including newly built ships and recent purchases, there remained :

451 national steamships, gross tonnage	1,503,144
44 sequestrated steamships, gross tonnage	227,139

The difference as compared with the figures for 1914 is shown in the following table :

	No. of Ships	National d. w.	No. of Ships	Sequestrated d. w.	Totals No. | ...	
Tonnage existing on 31st Dec. 1914 ..	644	1,958,838	69	370,236	713	...
Tonnage existing on 1st Jan. 1920 ...	451	1,503,144	44	227,139	495	...
Decrease	193	455,694	25	143,097	218	...

		Totals d. w.
January 1st, 1920	Total tonnage	2,329,074
December 31st, 1914	Total tonnage	1,730,283
	Decrease	598,791

Number of sailing vessels on 31st December, 1919: 4,490. Exact tonnage 267,565.

JAPAN.

It is evident that a full treatment of such a complicated and comprehensive subject as we are now going to deal with would require a number of voluminous works. For the present purpose, however, a brief outline of it will suffice.

To grasp the general situation of transportation in Japan before and after the war, it is highly important to consider first of all the role that Japan has played in the Great War and its economic influence on the progress of transportation. When the war broke out in Europe in 1914, Japan immediately followed her Allies in declaring war against Germany. She sent her troops to Tsingtao to co-operate with Great Britain and she despatched her fleets to the South Seas and even to the Mediterranean; she used her utmost endeavour to maintain peace in the Orient, thus enabling her allies to concentrate their forces in Europe. In addition she supplied money and munitions to certain of the Allies.

The commercial depression which had been felt in Japan for some time before the war was aggravated by the outbreak of the war, and there was consequently a considerable falling off in traffic both by land and sea. The subsequent development of the war, however, brought large orders for munitions from Russia; the consequent expansion of our foreign trade (exports in 1917 amounted to 1,600 million yen, and in 1915, 700 million yen), together with the resulting increase of activity in our own factories, made overwhelming demands, far in excess of the average, on our land and sea transport companies. And at the same time, the scarcity of bottoms in Europe gave ample scope for the employment of Japanese shipping, even in European waters. The consequent rise in freights and the lack of coasting vessels resulted in diverting traffic from the sea-route to the rail, thus causing serious congestion in the railway traffic. These circumstances made it necessary to effect immediate improvements in the management of the transport services; the construction of new railways was commenced, and, numerous ship-building yards were started to supply the pressing need of vessels.

Since 1920, when there was a great depression in commerce, Japan also could not escape from similar effects, and her inactivities in shipping enterprises have been amply illustrated in the closure of many new ship-building yards one after the other.

Such were the main causes and effects underlying the general conditions of traffic on land and sea in Japan, and in the following summary the respective conditions of railways, vessels, and so on will be seen.

I.

RAILWAYS.

A. CONDITION OF TRACKS.

The standard gauge of the Japanese railways is 5 feet 6 inches. For the purposes of local traffic there are some lines of 4 feet 8 inches gauge, operated by electric traction, and of 3 feet or 2 feet 6 inches, operated by steam. The usual motive power is steam, and the electrification of railways is, up to the present, chiefly confined to city and suburban traffic.

Since 1906, when the Railway Nationalisation Law came into effect, all the principal railways have come under Government management, but the construction and management of local railways has been left to private enterprise by the concession of charters. In March 1914, immediately before the outbreak of war, the total mileage of State railways was 5,472 (721 miles of which was double track) and of private railways 1,096; the total mileage thus amounted to 6,568 miles. At the beginning of the war, State railways were being constructed at an average rate of about 213 miles a year in the execution of a definite programme. During the war (1915-1918), however, the rate of construction was reduced to almost half the pre-war rate owing to the fact that efforts were directed rather to improvement than to construction and, further, to the scarcity of materials and labour as a result of the war. At the end of March, 1919, the year immediately after the Armistice, the entire mileage of the State railways stood at 6,208 (832 miles of which were double track) and of private railways 2,005, thus showing an increase of 13 % in Government-owned railways, while that of private railways was almost double as compared with before the war. This is mainly due to the rapid progress attained in commerce and industry as well as in agriculture and forestry in the provincial districts.

B. ROLLING-STOCK.

(1) *Locomotives*.—In March 1914, the number of locomotives was 2,500 (tank engines 1,248; tender engines 1,240; electric locomotives 12) with an aggregate weight of 137,465 tons, the average weight per engine being 55 tons. In March 1919, the number of tank engines decreased to 1,181, while the tender engines amounted to 1,920 (showing an increase of over 50 %), and electric locomotives 7, thus showing a total of 3,120 with an aggregate weight of 194,655 tons (average weight per engine 62.4 tons).

This is due to the fact that, in order to increase the speed and tractive power of engines, the number of tank engines was reduced and the tender engines and larger type locomotives were increased.

(2) *Passenger-stock*.—In March 1913, there were 4,200 small-type carriages (4 wheel) and 2,240 bogie coaches, the total 6,440, with seating capacity for 269,851 passengers. In March 1919, the number of 4-wheel small-type carriages was reduced to 3,937, and the bogie carriages were increased to 3,583 (an increase of about 60 %), the total being 7,520 with seating capacity for 334,765 passengers. As these figures show, the adjustment resulted in an increase of bogie stock over small-type carriages with a view to increasing the average carrying capacity per vehicle and improving facilities.

(3) *Goods wagons*.—In March 1914, the number of covered wagons was 19,678, and open trucks 22,936, the total being 42,614 with a freight capacity of 365,156 tons (average capacity per vehicle 8.6 tons). In March, 1919, the total was 51,065 with freight capacity of 570,192 tons (average capacity 11.1 tons) showing an increase in number of 20 % and in capacity of 60 %, mainly due to the increase of the larger type wagons over the small-type trucks.

C. TRAFFIC.

As previously stated, a financial depression was prevalent in Japan at the beginning of the war, and this is further shown in the figures given below as to the condition of traffic.

	Passenger miles (Passengers)	Ton miles (Goods)
1913	3,690,000	3,050,000
1914	3,620,000	2,980,000

Towards the autumn of 1915, conditions of trade and industry in Japan showed an unprecedented increase, which, keeping pace with the progress of the great war, reached its climax at the armistice, when the traffic reached 7,940 million passenger miles and the entire volume of goods carried was 6,290 million ton-miles, thus showing an increase of 119 % in the number of passengers and of 111 % in the volume of goods as compared with those at the beginning of the war.

It will readily be seen, therefore, that such an enormous increase of passengers and goods inevitably caused a heavy congestion of traffic in spite of the strenuous efforts made to improve operation and to increase not only the number of cars but also the speed and frequency of trains.

D. TARIFFS.

(1) *Passenger Fares*.—The revised tariff instituted on November 1st, 1907, was in force at the early period of the war. This tariff was laid down on a sliding-scale system, divided into five zones as below :

Class	Distance	Rate per mile
	miles	sen
	1— 50	1.65
	50.1—100	1.30
3rd class	100.1—200	1.00
	200.1—300	80
	over 300	70
2nd class		150 % of 3rd class
1st class		250 % of 3rd class

(With extra charges for express trains.)

Since July 1918, however, owing to the hardships felt as a result of a systematic scheme on account of the various handicaps produced by the war, the tariff was revised as follows :—

3rd class	increased	25 %
2nd "	"	75 % of 3rd class
1st "	"	177 % of 3rd —
Express charges	" about	50 %

This increase is moderate as compared with the high cost of living in Japan, and the advance in prices and wages has compelled a further revision of the tariff, as follows :—

3rd class	average increase	20 %
2nd "	" "	{ 30-40 %
1st "	" "	

The following is the revised tariff which was put into force in February, 1920, and which is still in force.

Class	Distance	Rate per mile
	miles	sen
	1— 50	2.50
	50.0—100	2.10
	100.1—200	1.70
3rd class	200.1—300	1.40
	300.1—400	1.20
	400.1—500	1.10
	500.1	1
2nd class		200 % of 3rd class
1st class		300 % of 3rd class

(Extra charges for express trains)

The various private railways have their own tariffs, which are considerably higher than those of the State railways. This is due chiefly to the short length of their lines, the mileage of which ranges from 120 miles to only a few miles, the average being only 20 miles.

(2) *Freight Rates.*—The revised tariff of 1912 was in force at the beginning of the war. The main features of that tariff were as follows: (1) The adoption of the principle of the sliding scale on the basis of a small zone system; (2) regulation of rates according to the classification of goods divided into five groups in view of their quality, form, weight, value and use, etc.; (3) classification of wagon-load consignments into three classes, under which the rates varied accordingly, etc.

At the end of March 1914, the average distance traversed was 84 miles per ton, the average rate of one ton per mile being 1 sen 731. The advance in prices and wages caused by the trade expansion and industrial activities in the course of the war increased the running expenses of the railways to such an extent as to make it difficult to balance revenue and expenditure. In the circumstances the tariff was revised in September 1918, rates were increased, on the average, 20 %, and certain adjustments and modifications were likewise made in the rates.

The object of these revisions and adjustments was to meet the financial needs of the railways, but also the ideal of social policy was also kept in view; for example, a reduction of rates on the necessities of life was made, in order to neutralize the soaring tendency of prices. The year ending March 31, 1919, witnessed a remarkable increase of the average goods traffic per ton of 105 miles, the average rate of one ton per mile being 2.8 sen.

The universal distress which prevailed in the business world especially after the spring of 1920, when Japan was overshadowed by threatened panic, affected railway traffic to such an extent as to necessitate a further revision of tariffs to meet emergencies and to obtain a fund for the construction and improvement of such lines as were urgently necessary. Quite recently new tariffs have been prepared, to come into force in February

1921, involving an average increase of 28 % in rates. The chief features of the new tariff are the improvements in the classification of goods; these classes have been increased from 350 to 1,200, and have been arranged more in consonance with their qualities and uses, and also in the change in the number of groups from five to six; furthermore, certain adjustments were made with a view to carrying out certain social and industrial policies.

E. INTERNATIONAL TRAFFIC.

Situated as she is in the Far East, and surrounded by the sea, the international traffic of Japan was formerly conducted only through sea-routes. Since the Korean and Manchurian railways came under Japanese control, however, international through traffic has been inaugurated through the medium of the two railways establishing the overseas connection between the Japanese, Chinese and Chinese Eastern Railways. Furthermore, in 1912, when Japan was admitted at the Berne Conference into the Trans-Siberian Through Passenger Traffic Union, she was brought into direct railway communication with Europe; a new epoch was thus reached in overland communications between Europe and the Far East. To give further details:—

(1) Arrangements were made in 1911 to open through passenger traffic between the Japanese railways and Petrograd, Moscow, Odessa and Irkutsk, the service comprising the three routes *via* Vladivostock, *via* Dairen, and *via* Chosen.

(2) A service was established in 1912 between the Chinese Eastern Railway, the Ussuri Railway (Siberia) and the Russian fleet, on the Russian side, and the Japanese Railways, the South Manchuria Railway and the Osaka Chosen Kaisha S. S. Co. on the Japanese side; this service was joined by the Chosen Railways two years later.

(3) In 1913, through passenger and goods traffic was opened between the Japanese and Chinese railways as a result of several traffic conferences held by both authorities.

(4) In 1913 again, as stated above, Japanese participation in the Berne Convention brought the Trans-Siberian international through traffic into effect and marked an epoch in overland communications between Europe and the Far East.

(5) The establishment of through traffic with Europe gave facilities for the institution of the two circular tour services known as the "Circular Tour *via* Siberia and Suez" and the "Around-the-World Tour *via* Siberia and Canada."

For various reasons of a complex character the through goods traffic between Japan and Russia was not established until January 1914—four years later than the inauguration of through passenger traffic in general. Further, the service which then existed was limited in scope, and covered no more than North Manchuria and the Maritime Province on the Russian side. The extension of this service into European Russia *via* Siberia was.

contemplated, but with the outbreak of the war the matter was thrust into the background.

Such was the situation before the war, and even at the beginning of the war international traffic conditions were not greatly affected. But the Russian revolution put the Siberian railways out of use for that purpose, at least, and overland communication between Europe and the Far East has thus unfortunately been brought to a standstill.

Meanwhile through traffic between the Japanese and Chinese railways has made further progress; in 1915 various arrangements were made in connection with the Chinese-Japanese circular-route tickets, Chino-Japanese through tickets for excursion parties, and so on. Furthermore, in 1917, a through service for general luggage, except for certain special articles, was established between Tokyo and certain other stations in Japan on the one side and Peking and Tientsin stations and the Peking-Mukden railways in China on the other, as a further step towards the realisation of Chino-Japanese through goods traffic.

F. FUEL.

The fuel used on the Japanese railways is, as a rule, coal, the motive power of the railways being principally steam. Crude petroleum, however, is sometimes used for town railways and also for mountains where tunnels are frequent.

In 1914 the consumption of coal amounted to 178 million tons, and crude petroleum to 2,933 kilolitres, the average price of coal being 5.17 yen per ton and of crude petroleum, 1.40 yen per kilolitre.

In the year ending March 1919, the consumption of coal amounted to 307 million tons — an increase of 72.6 % over that at the beginning of the war. The average price was 19 yen per ton, showing an increase of about 40 %, and of crude petroleum, 3.472 kilolitres, the average price being 3.61 yen per kilolitre — an increase of 250 %. On the other hand, the consumption of coal by private railways amounted to 170,000-180,000 tons in the same period.

G. ECONOMIC CONDITION OF THE RAILWAYS.

The financial results of the working of the railways under Government management has proved to be very favourable; even in the period from April 1914 to March 1915, when the working of railways was most affected by the outbreak of the war, the ratio of earnings to expenses was 54.1 %, and the net profit amounted to 51,500,000 yen, the percentage of profit on invested capital (1,007 million yen) being 5.1 %. Despite the fact that expenses amounted to 156 million yen, due to the abnormal advance in the cost of materials and wages, the earnings in the year which included the armistice (April 1918 to March 1919) were 243 million yen (in contrast to 112 million in 1914), yielding a profit of 7 % on the capital of 1,270 million yen. The period April 1919 to March 1920 was a prosperous year

in the business world, and the net profit of the railways amounted to 100 million yen, due chiefly to the increase in passenger rates. About April 1920, a general depression was felt in all directions and naturally caused a gradual decline in passenger as well as goods traffic.

However, under the financial system of the Japanese Government, by which profits accruing from the railways may be used for the improvement and construction of railways, the present programme will bring in annual earnings of about 100 million yen; further construction and improvements are to be made, involving capital of about 200 million yen. About 100 millions of this will be raised by a loan.

II.

SHIPPING.

A. CONDITION OF VESSELS AND SHIP-BUILDING.

The total number of Japanese vessels in 1919 was 17,576, representing a gross tonnage of 3,315,270. At the end of 1920 the total of Japanese ships was estimated to exceed 4 million tons gross, though an accurate figure is not available from available statistics. In May 1920, the number of vessels of over 1,000 tons was estimated at 779, representing a gross tonnage of 2,603,031. A comparison of the total tonnage in 1920 with that of 1919 shows an increase of 7 to 8 %, and this rate of increase is not far from the average rate of the last ten years—7.65 %; as compared, however, with the record rate of 1917 — 22.9 % — it showed a notable decrease.

Wooden vessels.—Before the war there were no wooden vessels with a tonnage of more than 1,000. In 1918, however, there were 11 wooden vessels of that capacity, representing over 10,000 tons gross, together with 137 vessels of 500-1,000 tons, representing over 100,000 tons gross; vessels with a tonnage of under 500 tons increased after the war by 40,000 tons gross. The total increase in the number of wooden vessels amounted a 149 %.

Steel vessels.—The increase in the number of vessels after the war was as follows :—

Vessels with a tonnage of	3,000-10,000	290,000 tons
» » » »	1,000-3,000	170,000 tons
» » » »	500-1,000	60,000 tons

But those with a tonnage of over 10,000 decreased by 20,000 tons and those of under 500 tons also decreased by 20,000. Thus, the total increase in steel ships amounted to 27 %.

Age of vessels.—Vessels of 5 years old or more in 1918 (after the war) exceeded those in 1913 (before the war) by about 700,000 tons. The increase after the war of the vessels of the same age was about 42 % ; before the war it was about 17 %.

Quality of ships.—Newly-built Japanese steam-ships of large type rendered excellent service during the war, and were considered very good as cargo-boats both as regards type and speed, but small steamers of 1,000 tons or thereabout are much inferior in quality as well as in speed ; the lack of adequate engine-rooms, due to unsatisfactory facilities and hasty construction at the shipbuilding yards, must be ascribed to wartime conditions.

Trawlers.—86 trawlers, with a tonnage of 17,464, were sold to foreign countries during the war, and the majority of those remaining were transformed into cargo boats, thus showing the decrease of trawlers. At the end of 1918 there remained only 10 boats representing 2,156 tons.

Shipbuilding capacity.—Vessels under construction at the end of 1920 numbered about 60, with an aggregate tonnage of 25,000 tons gross. This represented about 60 % of the shipbuilding capacity of Japan.

Before the war the shipbuilding capacity of Japan was only 17 ships of a tonnage of 1,000 ; in 1917 it rose to 157 ships of about 5,000 tons.

The general depression caused by the conclusion of the armistice dealt so hard a blow to the shipbuilding industry that during 1919-20 the numerous small dockyards deficient in capital were closed down. Recently even larger yards have found it necessary to discharge about one-fourth of their workers.

A striking feature of the changes which have taken place in Japanese shipping during the intervening period of the war is the remarkable increase of ocean-going ships ; at the end of 1920 there was an increase of about 800,000 tons in cargo vessels of that category. The progress made by Japanese shipping is clearly illustrated by the fact that although before the war there existed few large type cargo-boats, except those used in the great subsidized lines, during the war 100 ships representing 700,000 gross tons were produced to be chartered by private shipowners.

The following table shows the number and tonnage of the Japanese ships registered in the period 1913-1919 :—

STEAMSHIPS			SAILING VESSELS		TOTAL		Increase over preceding year.
Year	Number	Gross tons	Number	Gross tons	Number	Gross tons	
1913	2,243	1,722,970	9,151	545,617	11,394	2,268,587	0
1914	2,331	1,853,425	9,611	536,503	11,942	2,419,928	6.7
1915	2,325	1,872,859	10,299	595,521	12,624	2,467,344	2.0
1916	2,345	1,939,979	10,860	634,340	13,205	2,574,319	4.3
1917	2,353	2,021,036	11,862	734,052	14,215	2,755,088	7.0
1918	2,805	2,482,325	13,871	905,760	16,675	3,388,085	22.9
1919	2,870	2,840,650	13,781	13,781	945,033	3,785,683	11.7

B. NAVIGATION SERVICE.

I.—Regular Steamship Services.

At the end of 1913 (immediately before the war) the following were the regular services run by Japanese vessels between Japan and foreign ports, no regular service being available on Japanese vessels so far as navigation between foreign ports themselves was concerned.

(1) European service: Yokohama-Antwerp line (passengers and goods), *via* Indian Ocean-Suez Canal, fortnightly sailings. Vessels employed, 11 (15,000-6,000 tons).

(2) North American service: (a) Hongkong-San-Francisco line (passengers and goods), *via* Japan-Honolulu, monthly sailings. Vessels employed, 3 (13,000 tons).

(b) Hongkong-Seattle line (passengers and goods), *via* Japan, monthly. Vessels, 4 (6,000 tons).

(c) Hongkong-Tacoma line (goods and passengers), *via* Japan, fortnightly. Vessels, 6 (6,000 tons).

(3) South American service: Hongkong-Valparaiso line (passengers and goods), *via* Japan, North America (southern coast), Mexico, Panama, Peru, every 2 months. Vessels, 3 (9,500-6,700 tons).

(4) Australian service: Yokohama-Melbourne line (passengers and goods), *via* Hongkong-Manilla, monthly. Vessels, 3 (7,400-5,000 tons).

(5) Java service: Kobe-Java line (principally goods), *via* Hongkong-Borneo-Serebes, monthly. Vessels, 3 (4,000 tons).

(6) Indian service: (a) Kobe-Calcutta line (goods). Twice monthly. Vessels, 6 (7,000-4,000 tons).

(b) Kobe-Bombay line (goods) fortnightly. Vessels, 7 (5,000-3,000 tons).

(7) China Service: (a) Yokohama-Shanghai line (passengers and goods), *via* Japanese ports, fortnightly. Vessels, 5 (3,000-2,000 tons).

(b) Kobe-Shanghai line (goods) 16 times per year. Vessels, 1 (2,000 tons).

(c) Yangtse-Kiang coasting service: 1. Shanghai-Hankow line (passengers and goods) 3 or 4 times per week, vessels, 3 (3,000-2,000 tons); 2. Hankow-Newchang line (passengers and goods) 6 times monthly, vessels, 2 (1,000 tons); 3. Hankow-Shangtang line (passengers and goods) 8 times per month, vessels, 2 (1,000-900 tons); 4. Hankow-Changtu line (passengers and goods) twice monthly. Vessels, 1 (500 tons).

(d) Kobe-Newchang line (passengers and goods) weekly. Vessels, 4 (2,000-1,000 tons).

(e) Yokohama-Newchang line (passengers and goods), fortnightly. Vessels, 3 (2,000-1,000 tons).

(f) Kobe-Dairen line (passengers and goods), twice weekly. Vessels, 4 (3,000-2,000 tons).

(g) Tsuruga-Vladivostock line (passengers and goods), weekly. Vessels, 1 (2,000 tons).

(h) Kobe-Vladivostock line (passengers and goods), *via* Korea, monthly. Vessels, 1 (2,000 tons).

As a result of the outbreak of war, the number of foreign liners which had plied regularly or irregularly between Japan and various ports of the world was gradually reduced; these services were almost abandoned as the war continued and Japanese foreign trade was seriously affected. The Japanese authorities and business men realised the urgent need for cargo space of their own, in order to maintain and develop Japanese trade as well as for the reasons of national security; they therefore made united efforts to increase Japanese vessels and establish new steamship lines. As a result of these efforts, Japanese shipping made striking progress, and in June 1920, not long after the close of the war, several new Japanese regular lines were added to those already in service before the war.

The following are the regular lines added during the war to the above-mentioned list :—

(1) European services :— (a) Yokohama-Liverpool line (passengers and goods), *via* the Indian Ocean, Suez Canal, monthly sailing. Vessels, employed, 7 (6,000-5,000 tons); (b) Yokohama-Hamburg line (passengers and goods), 3 lines *via* the Indian Ocean and Suez Canal, monthly. Vessels, 4 (6,000-3,000 tons) and 7 (7,000-5,000 tons); (c) North America and European service (goods), *via* New York, English and French ports, every 2 months. Vessels, no fixed number; (d) South America and European service (goods). Between River Plate and England, every 2 months. Vessels, no fixed number.

(2) American service :— (a) Yokohama-New York line, *via* Panama, once every month. Vessels, 6 (7,000-5,000 tons); (b) Yokohama-New York line (goods), *via* Suez Canal, once every month. Vessels, 2 (7,000 tons); (c) Singapore-New York line (goods), *via* Manilla, Panama, monthly. Vessels, 6 (7,000-5,000 tons); (d) Calcutta-New-York line (goods), *via* Suez Canal, monthly. Vessels, 7 (7,000-3,000 tons); (e) Calcutta-New Orleans line (goods), *via* Hong-Kong, Japan, Panama, 7 sailings per year. Vessels, 3 (5,000-4,000 tons); (f) Hong-Kong-Puget Sound line (goods), *via* Japan, fortnightly. Vessels, 6 (9,000 tons); (g) Hongkong-San Francisco line, *via* Japan, monthly. Vessels, 3 (1,500-4,000 tons); (h) Kobe-Portland line (2 lines), monthly each line. Vessels, 2 each (4,000-3,000 tons).

(3) South American service :— (a) Yokohama-Buenos Aires line (goods), 2 lines, *via* South Africa, Brazil, (1) every 2 months. Vessels, 3 (5,000 tons); (2) 10 times per year. Vessels, 6 (5,000 tons); (b) Calcutta-South American, West Coast line (goods), every 2 months. Vessels, 3 (5,000 tons).

(4) Australian service :— (a) Yokohama-Melbourne line (goods), *via* Manilla, monthly. Vessels, 4 (3,000 tons); (b) Australia-South Sea

line (goods), *via* Sydney, Java, fortnightly. Vessels, no fixed number ; (c) Australia-India service (goods), every 2 months. Vessels, no fixed number.

(5) Indian service :— (a) Yokohama-Bombay line (goods), monthly. Vessels, 8 (6,000-3,000 tons) ; (b) Calcutta-Singapore line (goods), monthly. Vessels, no fixed number.

(6) South Sea service :— (a) Japan-Java-Calcutta line, monthly. Vessels (ex-German) 3 (3,000 tons) ; (b) Yokohama-Ex-German South Sea Island line (passengers and goods) 2 lines, every 2 months. Vessel, 1 (2,000 tons) ; (c) Bangkok-Java line (goods), 20 times per year. Vessel, 1 (1,000 tons) ; (d) Moji-Java line (goods), 2 lines, *via* Manilla, twice monthly. Vessels, no fixed number.

(7) Oriental service :— (a) Yokohama-Shanghai line, monthly. Vessels, 1 (2,000 tons) ; (b) Osaka-Tsingtao line (passengers and goods) 3 lines, twice per month each. Vessels, 1 each line (2,000 tons) ; (d) Yokohama-Tientsin line (passengers and goods), every 25 days. Vessel, 1 (1,000 tons) ; (d) Osaka-Tientsin line (passengers and goods), 2 lines ; (e) Osaka-Hangkow line, 2 lines.

Some of the above-mentioned lines may at present be changed or omitted, as a result of the general depression in Japanese shipping at the close of the war and also of the resumption by foreign shipping of abandoned services.

II. — *Irregular Service.*

Before the war the irregular services of Japanese shipping were devoted chiefly to neighbouring waters, such as the Japanese and Chinese coasts and the South Seas, and those engaged in ocean service were comparatively few. But this was no longer the case when the war gave rise to a world-wide demand on shipping, particularly in European waters and the Atlantic, and Japanese shipping found a chance to share in these activities. Even after the war it has continued its services in this direction.

The following are the figures for Japanese irregular services in 1914 and 1917:

Service	June 1914		June 1917	
	Number of ships	Gross tons	Number of ships	Gross tons
Europe	1	4,536	16	55,424
North America	4	15,717	32	136,625
Australia	5	27,339	5	14,703
India	4	15,798	24	77,789
Others	20	77,978	13	44,409
Total	34	141,368	90	328,950

Of late years the activities of the Japanese irregular services in this direction have naturally increased, owing to the remarkable increase in the number of Japanese ships.

On the following page is a complete list of figures illustrating the activities of Japanese shipping, including both regular and irregular service of vessels over 1,000 tons, for the years 1918, 1919 and 1920, ending in May.

Service.	1918 (end of May)		1919 (end of May)		1920 (end of May)	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
<i>I. Home Waters:</i>						
(a) Japanese coasts	239	499,379	401	805,770	415	876,752
(b) Near seas of Japan	126	253,732	178	328,910	173	340,601
(c) Near foreign ports	88	186,566	210	444,897	229	503,455
(d) Near foreign ports	13	28,736	1	1,618	1	2,351
(d) Yangtse River	12	30,345	12	30,345	12	30,345
<i>II. Ocean Service:</i>						
(a) Japan-America	273	271,412	281	1,315,840	325	1,626,474
(b) Japan-New-York	32	147,182	28	123,487	36	203,983
(c) Hongkong-Japan-America	7	47,586	15	94,512	22	138,218
(d) Japan-Australia	48	284,050	17	149,226	17	148,560
(e) South-America (east coasts)	14	58,140	22	83,948	33	136,108
(f) South Seas	6	36,016	13	80,644	12	66,470
(g) Europe	19	38,927	64	195,956	30	99,391
(h) Japan-Strait Settlement-South Seas ..	17	111,626	40	233,387	92	502,974
	50	125,635	6	18,205	10	28,287

(i) Japan-India	25	86,759	30	122,749	37	149,200
(j) India-Mediterranean	5	19,811	3	8,983	3	6,826
(k) Mediteranean	13	45,731	4	15,729	4	15,485
(l) South America (west coasts)	3	24,232	4	30,783	5	35,104
(m) Japan-South Sea-India	—	—	2	6,037	6	16,223
(n) Japan-Calcutta-New-York	—	—	5	20,060	7	33,426
(o) Japan-Mediterranean	6	27,055	27	105,382	11	46,219
(p) Bombay-Suez	3	10,600	—	—	—	—
(q) South-Africa	1	3,113	—	—	—	—
(r) Atlantic-Mediterranean	24	104,949	5	24,737	—	—
III. Under repairs	11	19,864	21	52,392	37	96,526
IV. Unknown	40	74,394	—	—	—	—
V. Stranded	2	3,468	—	—	—	—
TOTAL	565	1,768,517	703	2,173,986	779	2,603,031

C. CONDITION OF PASSENGER AND GOODS TRAFFIC.

Though it is difficult to give here an accurate description of the conditions of the passenger and goods traffic on the lines, extensive and numerous as they are, it is safe to assume that the volume of goods and passengers carried by Japanese vessels increased enormously during the war as a result of the abnormal expansion of trade previously referred to. The congestion of traffic particularly experienced in Oriental ports, due to the withdrawal, as a result of the war, of foreign shipping from the service in this direction, called for increased activities on the part of Japanese shipping on one hand, and on the other, a large demand for goods in Europe drew enormous exports from the Orient towards Europe; the greater part of such traffic was naturally carried by Japanese vessels. The activities of Japanese shipping in the matter of freight transport may be amply illustrated in the Japanese trade returns of corresponding years, the details of which, however, would not be mentioned here.

Extreme congestion of traffic was also experienced by Japanese passenger vessels, due to the collapse of the Siberian railways, as well as to the withdrawal of European vessels from Oriental fields. The main lines to Europe, America and Australia were thus left to the Japanese shipping, and it is not surprising that passenger traffic by Japanese vessels in this respect was so congested that since 1916 passengers on the Japanese liners have had to wait their turn to obtain accommodation months safter having applied for a passage.

D. FREIGHT RATES.

During the war, the freight rates of Japanese ships, as of all others, advanced by leaps and bounds, owing to the general shortage of bottoms, and this soaring tendency of freight rates continued until October 1918, when the War-time Shipping Regulations came into force.

The world-wide depression in shipping business after the war caused a sudden fall in the extent of Japanese shipping, and freight rates have tended to return to pre-war conditions.

The passenger rates of regular Japanese liners were not so radically affected by the war; most of them were fixed at relatively low rates for the public benefit, as they were subsidised by the Government. The percentage of increase in their rates was estimated roughly at about 50 %.

The following table shows freight rates in 1912 and 1917, with the categories of goods carried by subsidized and non-subsidized vessels:—

Freight Rates.

(Comparing 1912 with 1917.)

(1) European Service.

(a) From Japan to Europe.

General Cargo.		1912	1917
Subsidized vessels		50 shillings	90 shillings
Non-subsidized vessels		50 "	132 "
Lumber.		36.9 "	110 "
		36.9 "	132 "
Bean Oil.			
Subsidized vessels		30 "	100 "
Non-subsidized vessels		30 "	120 "
Beans.			
Subsidized vessels		42 "	135 "
Non-subsidized vessels		42 "	162 "

(b). From Europe to Japan.

Machinery.			
Subsidized vessels		42 shillings	67 shillings
Non-subsidized vessels		42 "	Not reported
Iron and steel materials.			
Subsidized vessels		25 "	45 shillings
Non-subsidized vessels		25 "	Not reported

(2) North American Service.

(a) From Japan to North America.

General cargo.		\$	\$
Subsidized vessels		6.50	8.50
Non-subsidized vessels		6.50	23.25
Foodstuff.			
Subsidized vessels		5.50	8.—
Non-subsidized vessels		5.50	25.—

	1912	1917
Rice.	\$	\$
Subsidized vessels	4	4.50
Non-subsidized vessels	4	28

(b) From North America to Japan.

Cotton.	\$	\$
Subsidized vessels	0.40	1.50
Non-subsidized vessels	0.40	1.50
Iron & steel.		
Subsidized vessels	0.30	0.40
Non-subsidized vessels	0.30	0.80
Iron ingots.		
Subsidized vessels	0.20	0.30
Non-subsidized vessels	0.30	0.80

(3) South America to Japan.

(a) From Japan to South America.

General cargo.	\$	\$
Subsidized vessels	10.00	13.00
Non-subsidized vessels	10.00	13.00
Chinaware.		
Subsidized vessels	10.00	13.00
Rice.	7.50	9.75

(b) From South America to Japan.

Nitre.		
Over 100 tons	24 shillings	60 shillings
Below 100 tons	30 "	64 "
»		

(4) Australia Service.

(a) From Japan to Australia.

General cargo.		
Subsidized vessels	25 shillings	50 shillings
Non-subsidized vessels	25 "	58 "

	1912	1917
Sulphur.		
Subsidized vessels	20 shillings	35 shillings
Non-subsidized vessels	20 "	35 "
Cotton.		
Subsidized vessels	25 "	50 "
Non-subsidized vessels	—	58 "

(b) From Australia to Japan.

General cargo.		
Subsidized vessels	33 shillings	55 shillings
Non-subsidized vessels	—	60 "
Lead.		
Subsidized vessels	20 "	30 "
Non-subsidized vessels	— "	30 "

(5) Bombay Service.

(a) From Japan to Bombay.

General cargo.		
Non-subsidized vessels	11.00 yen	41.00 yen
Glass and Chinaware.		
Non-subsidized vessels	8.00 "	39.00 "
Matches.	6.75 "	39.00 "

(b) From Bombay to Japan.

Cotton	9.25 rs.	25.00 rs.
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(6) Calcutta Service.

(a) From Japan to Calcutta.

General cargo	2.00 yen	39.00 yen
Glass and chinaware	2.00 "	37.00 "
Matches	5.25 "	36.00 "

(b) From Calcutta to Japan.

Pig Iron	16 shillings	30 shillings
Cotton	7.50 rs.	25.000 rs.
Gunnybag	7.00 rs.	60.000 rs.

Time Charterages.

	Large type (over 6,000 tons)	Medium type (about 3,000 tons)	Small type (below 1,000 tons)
	yen	yen	yen
1914, May	—	1.55	—
October	—	2.00	—
1915, May	3.50	3.20	2.60
October	6.00	5.50	4.40
1916, May	18.00	16.00	11.00
October	14.00	13.00	8.00
1917, May	21.00	18.00	16.00
October	40.00	36.00	34.00
1918, May	45.00	38.00	28.00
October	41.00	34.00	28.00
1919, May	28.00	22.00	20.00
October	20.00	15.00	13.00
1920, May	12.00	10.00	8.00
October	8.00	6.50	5.00

E. FUEL.

Coal is the fuel chiefly used on Japanese vessels. Although there are certain vessels built since 1911 which use both coal and crude petroleum, the use of the latter is very limited, owing to its high price as well as to the lack of reservoirs for it. The consumption of coal as fuel for vessels in Japan was reported in 1917 as 1,126,000 tons for Japanese vessels, and 122,000 tons for foreign vessels. The large demand for coal during the war caused the price to rise to a height of 23-24 yen per ton in 1917, as compared with 5-6 yen in 1913.

F. GENERAL FINANCIAL SITUATION OF SHIPPING.

The cost of vessels—a dominant factor of shipping business—was in 1913 as follows:—

New vessels:—

Large	types, about	100	yen	per	ton.
Medium	»	»	125	»	»
Small	»	»	135	»	»

The unprecedented demand for vessels and the shortage of ship-building materials, as well as the advance of wages during the war, caused a rise in the cost of vessels, which, at the end of 1917, was as follows:—

Large types	750	yen.
Medium types	700	»
Small types	550	»

and in 1918 it reached a climax:—

Large types	900-1,000	yen.
Medium types	800-850	»
Small types	700	» approximately.

It will be seen from the foregoing that a peculiar tendency was shown in the price of vessels due to the abnormal demand on the larger ships during the war, which in normal days used to be higher for small-type vessels than for larger types.

In 1920, the cost of vessels, though it did not return to the normal conditions, tended to decrease to the actual cost of construction, exclusive of speculative factors; it amounted to 200-225 yen per ton for large vessels.

The cost of running Japanese vessels increased after the outbreak of war almost 3-4 times as compared with pre-war figures, and the wages of crews likewise advanced about threefold. These circumstances, together with the general depression of trade, form a great handicap to Japanese shipping; its rivals will be very hard to beat, as the average charterage of world shipping is only about 2 yen (end of February last).

LATVIA.

I.

RAILWAYS.

1. *The Latvian Railway System.*—The Latvian railways comprise a total of 1,875.8 km. of broad-gauge track, of which 740 km. are of the normal European gauge, and 1,135.8 km. of the Russian gauge. In addition there are 972.9 km. of narrow-gauge railways, 48.1 km. being of 1 metre-gauge, 267.7 km. of 75 cm. gauge, and 657.1 km. of 60 cm. gauge. The curves and gradients on the broad-gauge lines are not severe. The gradients are particularly easy on the main line from Russia, and also the Riga line, which follows the River Dwina (Duna); the fall here is only 0.0055 (5.5 %) over the whole distance. On the remaining lines the steepest gradient is 0.0085 (8.5 %). Various types of rails are in use throughout the system, the most general being of the type IV with a weight 29.5 kilog. per foot; 1,500 sleepers are used for 1 km. of track.

2. *Nature of the Country served by these Railways.*—As the gradients of the broad-gauge lines show, the undulating surface of Latvia offers no insuperable difficulties to the construction of railways.

The sleepers are deeply embedded and covered with a thick layer of soil or sand. The depth of the valleys rarely exceeds 300 metres.

Difficulties are sometimes caused by peat bogs or moraines. The North Latvian Railway terminates at Riga. From Riga it runs N.E. to the railway junction of Walk, passing first through the bare and sandy plain of Riga, which it crosses in about two hours, and then entering the undulating country of southern Latvia; rich pasture-land and woodland forests testify to the fertility of the soil. The Latvian portion of the river forms a deep valley, containing moraines, and crevasses 80 m. deep. Sigulda, Eriki and Zesis (Sigulda-Segevoid, Eriki-Ramotzky, Zesis-Venden) are the principal tourist-centres for this part of Latvia, which is commonly referred to as Latvian Switzerland, and contains many objects of geographical and historical interest. In Eastern Latvia a narrow-gauge railway runs.

from Walk to Aluksne (Marienburg) which is situated in the highest part of the country, near Mount Munamegio (324 m. high). Most of the tributaries on the right bank of the Aa River rise here and flow into Lake Peipus, as does also the River Ewst, the principal affluent on the right bank of the Dwina (Duna). The latter flows in a south-westerly direction passing through Lake Luban. The railway runs in the same direction, following the foot of the hills. In South Latvia, up to the point where it joins the main line Riga — Daugavpils at Plavinas (Steckmanshof) it follows the right bank of the Daugava, only leaving it for a short distance. The line runs through similar country to that of the Riga-Walk line — a sandy plain watered by the Dwina (Duna), which is deep enough to be used as a navigable waterway in conjunction with the railway. On leaving Ikschikile (Ixhyll) the railway enters the southern part of the South Latvian hills, the other sections of which have already been described. The first hills rise near Ogre; they are very precipitous, and of great geological interest. The River Ogre here runs into the Dwina. This river, with its stony bed, is swift and deep in the spring when the snows melt, and frequently carries away its wooden bridges, but has no great depth in summer. A little further on, the railway affords the sole means of communication, as the Dwina forms rapids which do not allow of navigation. It is, however, possible to make use of the central channel as far as Riga for timber floating. Continuing to Plavinas, the line passes through a picturesque hilly country, in which the tributaries of the Dwina form rapids and waterfalls.

Beyond the confluence of the Dwina and Aivuxfta rivers, the country falls gradually to a level of 60 metres above sea level and becomes flat and swampy.

The Dwina again becomes navigable for small steamers as far as Daugavpils (Dunaburg) and Kraslovka. The railway here follows the right bank. 20 kilometres beyond Plavinas (Steckmanshof) it crosses the Ventspils-Moscow line and continues eastwards to Rezekna (Rositten). The country rises considerably towards the east, resembling the southern hill district. From Rezekna the line continues eastwards into Russia and is crossed by the line Daugavpils-Pleskava (Dvinsk-Plescau) running north, east.

The line then follows the left bank of the Dwina from Krustpils (Kreisburg) to the west of Ielgava (Mitau). Here it crosses the hill district of Upper Courland, the source of numerous small tributaries of the Courland section of the River Aa. It then crosses the plain of Ielgava (Mitau) which is watered by these rivers and by others rising in Lithuanian Courland to the south of this plain. The tributaries of the Aa which rise in these hills irrigate the plain to the south of the railway. The character of the ground changes to the north of the railway; marsh and prairie land succeed each other on both sides of the line between Jelgava (Mitau) and Riga. From Ielgava two lines run to the Baltic, the northern to Ventspils and the southern to Leepaja (Libau). The northern crosses the hilly country of Central Courland and the River Abava (Abau), the right bank tributary of the Venta. This hilly country resembles Latvia, though it does not

attain such high altitudes as the latter. Descending to the lowest part of Northern Courland, the line passes close to Lake Usma (Usmaiten), the largest lake in the country, bounded on the east by virgin forests. From Tuksum a branch line runs to Riga, calling at several coastal watering-places. The country is composed of a succession of swamps and sandy plains. The line Ielgava-Leepaja (Libau) runs through the centre of Courland, crosses the river Venta and the hills on its left bank, and terminates at the coast. The mildness of the climate here is in marked contrast to that of Northern Latvia, owing to the more southerly situation and the vicinity of the sea. The harbour of Leepaja is never ice-bound. This coast, with its dunes and lagoons, resembles that of East Russia.

3. *Traffic on the Latvian Broad-gauge System and Possibilities of Future Development.*—Traffic on the broad-gauge railway system may be classed under three heads: firstly, transit from Russia and other foreign countries which once formed part of Russia — the lines Riga-Daugavpils (Dunaburg), Roshnova (Silupe) Krustpils-Ventspils (or Riga), Vainode-Leepaja (Libau) and Walk-Riga; secondly, services between the principal centres, the lines Riga-Ielgava-Leepaja-Riga-Sloka-Tuksum, Vohgulbene-Eriki, Vohgulbene (Altschvanenburg)-Plavinas; and lastly, the communications in the neighbourhood of Riga — Riga-Kemorsi, Riga-Ogre, Riga-Sigulda.

The amount of transit traffic on the section Riga-Ventspils and Leepaja is shown in the following table of exports from and imports to the ports of the Baltic Sea which belonged to the former Russian Empire. The amount of traffic at each port is expressed as a percentage of the total exports from and imports to all these ports:—

Port	Export		Import	
	1905-10	1912	1905-10	1912
Petrograd	25.1 %	19.8 %	37.0 %	35.1 %
Reval	5.1 %	3.7 %	18.1 %	19.1 %
Parnu	1.7 %	1.2 %	0.4 %	0.4 %
Riga	45.3 %	43.1 %	33.6 %	32.2 %
Ventspils	11.7 %	18.2 %	4.2 %	6.1 %
Leepaja (Libau)	11.1 %	13.9 %	6.7 %	7.1 %
	100 %	100 %	100 %	100 %

In 1913 exports from Riga amounted to 226 $\frac{1}{4}$ million roubles, that is to say, 18.4 % of the whole of the export trade of the former Russian Empire; in the same year the imports into Riga amounted to 178 million roubles, that is to say, 15.6 % of the whole of the Russian imports. In 1908 the number of railway wagons arriving daily in Riga was 800, and in

1913 this number reached 1,300. In the same year the quantity of imports arriving at Riga was 168 million poods, and the exports 96 million poods. The goods exported consisted chiefly of corn, wood, flax, hemp, linseed, linseed cakes and leather, and the chief exports were: coal, coke, dyers' wood, machines and implements, cork, wood, compost, phosphate, tea, lead, indiarubber, sulphur, etc. At the beginning of 1900, the average annual exports from the port of Leepaja amounted to about 60 million poods, and the imports to about 22 million poods. The average annual exports from the port of Ventspils was then about 17 million poods, and the imports about 3,500,000 poods.

In 1913, these figures had increased in proportion to the growth of railroad traffic at Riga and the increase of general traffic on the Baltic Sea, as is shown in the above table.

The traffic on the Riga-Daugavpils and Krustpils-Ventspils lines comes chiefly from the middle and lower Volga districts, whilst that on the Leepaja-Vainodon line comes from Lithuania, Poland and South-West Russia.

As regards transit, the future development of the broad-gauge railway system of Latvia depends entirely on its connection with the corresponding main lines in Russia and on the exploitation of the immense natural resources existing in marshy districts, where a properly constructed and well-managed railway system is entirely lacking.

A similar development occurred seventy years ago when traffic on the section Riga-Daugavpils (Dunaburg) and at Riga itself, increased to a considerable extent through the construction of the Griase-Tzaritzin railway, which connected with the lower Volga districts, with the Caspian Sea and with the fertile plains of the Black Country.

A similar development took place at Ventspils and Riga, when the Moscow-Ventspils-Rijbinsk railway was constructed; and even greater developments will take place when the main line is built from Riga to West Siberia via Tomsk, Kusnezki and the Attai region and from Riga to the Caucasus and the Black Sea via Daugavpils (Dunaburg) Mohilew, the Dnieper and Rostov. The former line will permit the transport of corn and wood from the district between the Volga and the Ural mountains, and the natural resources of the Urals, where copper is to be found in considerable quantities, to Kischtim. Latvia will be enabled to draw upon the resources of Western Siberia — wheat, meat, butter and leather — and will further be connected with the basin of the Kusnezki, rich in coal and minerals, which are to be found almost on the surface of the ground; lastly, it will be connected with the Attai district, which is rich in natural products. The second line affords the shortest and best connection with the basin of the Donetz, the North of the Caucasus and the Trans-Caucasus, the immense natural wealth of which is well known.

Reference must also be made to the Riga-Vilna line, with its branch from Cracow to Bausk, which is an important transit route for Latvian exports. This line crosses Latvia itself, serves the rich and fertile districts of Bausk and Schonberg in Courland, and connects them directly with

Riga ; Riga itself is connected with the beautiful watering-place of Baldou, with its sulphur springs.

It is of supreme importance for Latvia to be placed in direct communication with the centres of Riga, Ielgava and Leepaja by a broad-gauge line. At present this connection is effected through the station of Moscheiki, that is, through Lithuania, a friendly foreign country, and Latvia cannot regard this as a satisfactory state of affairs. It is therefore proposed to construct a line from Vecauce or Behne to Saldus (Frauenburg), replacing the existing track by a broad-line gauge in the districts of Saldus, Aispute, Leepaja. In this way the district between Vecauce and Saldus will be supplied with a railway. For local traffic an average of two passenger trains and two or three goods trains per day in each direction sufficed before the war. In those days suburban traffic, especially in the summer, increased to a very considerable extent, especially traffic for the coast of Riga, which was a favourite resort not only of the inhabitants of Riga itself but also of Russians and among others of the inhabitants of Moscow. Important watering-places frequented by the inhabitants of Central Russia are situated along this coast, and the small town of Kemmern with its sulphur-springs and mud-baths was especially well-known.

In course of time the inhabitants of Riga began to spend the whole year at the most popular coastal resorts — at Mdiori and Dubulti (Dubbeln) for example, which gradually became suburbs of Riga. The increase in population and in the number of foreigners frequenting this coast is explained by the health-giving properties of the sea-air, by the favourable local conditions and situation of the Riga coast, and, above all, by the satisfactory railway facilities which were placed at the disposal of the public.

There were, amongst others, through trains from Riga to Kemer (Kemmer).

The coast of Riga attracted visitors even so early as 1820 ; it is very favourably situated at a distance of about 18 versts from Riga, and has a dry soil of yellow alluvial sand, covered with a thin layer of loam. This sand is so dry and porous that in a few moments it can completely absorb a large quantity of water. The whole coast of the Gulf of Riga is covered with pine forests which grow even on dunes fifty feet high. These dunes descend to the sea and form a flat shore of hard golden sand.

The sea-floor, which consists of the same yellow sand, gradually slopes away from the coast, and thus renders it possible for persons desiring to bathe to walk into the sea more than a hundred feet. In 1837 about 2,000 foreigners spent the summer on the coast of Riga ; in 1850 there were about 15,000, and after the construction of the Inkum Railway in 1877 the number of foreigners increased rapidly.

In 1911 it increased to 65,000, and just before the outbreak of war, according to the applications received by the railway companies, it had reached a total of 100,000.

Owing to the increasing traffic demands, the number of trains to the coast per day was sometimes as much as 60 (30 in each direction), and on the average 50 (25 in each direction). During the season about 3,000,000

passengers were carried — about 30,000 daily. Immediately before the war, the number of trains per day during the season amounted to 100 (50 in each direction).

4. *The Latvian Narrow-gauge Railway System ; its Future Development.*
— The existing narrow-gauge lines in Latvia are as follows :—

1. Leepaja-Aispute : built in 1900, gauge 1 metre, length of line, 48 km.

2. Ainashi-Smiletene : constructed in 1910-1912 ; gauge, 0.75 ; length of line, 113.2 km.

3. Walk-Plavinas : built by the Lvonian Railway Company before 1903 : gauge 0.75 ; length of line 210.8 km. The section Vecgulfene-Plavinas, 98.4 km. in length, was reconstructed during the war on the normal Russian gauge.

4. Walk-Plahtere : built by the Russian Railway Company ; gauge 0.75 ; length of Latvian section 60.4 km.

5. Ropashi-Nicolais : gauge 0.75 ; length of line, including branches, 24 km.

6. Ligate-Iaunpils-Madlene-Ledmene : gauge 0.75 ; length, including branch, 146 km.

7. Aispute-Saldus : gauge 0.60 ; length 66.5 km.

8. Ventspils-Mazirbe-Stende : gauge 0.60 ; total length 202 km.

9. Meitene-Bausk : gauge 0.60 ; length 32.2 km.

10. Ikschkile-Rapashi : gauge 0.60 ; length, including branches, 30 km.

11. Yekabmeests (Jacobstadt)-Daugavpils section : gauge 0.60 ; total length of Latvian section, 225 km.

12. Dubeni (Duben)-Darbini (Dorbjany) : gauge 0.60 ; length 51 km.

The total length of the local railways is about 1,400 km. At present all the Latvian railways are State-owned and administered by the Government, excepting the line Leepaja-Aispute, but only 818 km. of the latter are at present in use, as the remainder is not in good condition owing to lack of the necessary rolling-stock and materials for repair.

Future Requirements.—In order to develop the existing narrow-gauge system, the available rolling-stock must be increased by repairing the existing engines and coaches which need repair, and by sending abroad for the missing parts and the additional locomotives and rolling-stock required.

In the second place, the narrow-gauge system must be developed in view of its important effect upon the economic prosperity of the country and in view of the development which can be predicted in agriculture, industry and the export of timber on a very large scale.

For these purposes the construction of the following lines is necessary:

(1) A continuation of the Ainaschi (Haynasch) narrow-gauge line to Jaunpabalgt (Naupebalg) and thence to Vicpubalga (Altpebalg) and in a westerly direction as far as Riga (the length of the line is 178 km.)

(2) A connection between Plahtere on the line Walk - Pernau (via Puikele Valmura, and the Limbaschi (Iemsal) line to the sea and along the coast to Riga) and the line from Pubalga near Jugla (length of line about 158 km.).

(3) A local line from Aispute to the town of Kuldiga (Goldingen) continuing towards Stende (length about 82 km.).

(4) A connection between Saldus and Ielgava (Mitau) either direct or via Autz and Tukkafe, with two branches.

(5) New local lines in Letgalia for the exploitation of the timber in the district of Lake Luban.

A preliminary survey of the line Smiltene—Pubalga—Riga, which is to be 178 km. in length, has already been carried out and a draft scheme drawn up.

This line will serve the most thickly populated—and in natural products, the richest—district of the former province of Livonia.

Detailed investigations into the commercial possibilities of this scheme shew that the expected traffic will fully guarantee the line as a paying concern.

The following are the chief articles which will be exported by means of this railway:

Timber, part of which will be conveyed north to the Latvian ports of Ainaschi and Salis, and part to Riga; corn and agricultural products, particularly flax, for which Latvia is famous (the Government will in future protect the cultivation of flax by all means in its power, as this is one of the surest means of improving its foreign credits).

Imports will consist of articles for domestic use among the peasants such as salt, herrings, iron, groceries, manures, and agricultural machinery, the lack of which is very considerably felt. It is estimated that the annual turnover of all these goods will amount to 14,900,000 poods (244,052 tons).

Preliminary surveys for the line Platore - Riga were carried out before the war, so that no obstacles of a technical nature prevent the immediate construction of the line. This line, 158 km. in length, will connect Riga with the town of Limbaschi, which is situated at a great distance from the railway, and will enable the whole district to export its agricultural products to Riga.

Timber, which will be the principal export on this line, can be sent abroad via Milgravis (Muhlgraben), the port of Riga. This line, when constructed, will also aid in the development of the whole Latvian coast, and will afford the inhabitants of Riga the possibility of visiting the pretty countryside of Neubad and Zarnikau in summer.

The construction of a local line from Aispute to Kuldiga, and thence to the junction at Stende (Stenden), would be of great advantage to the inhabitants of Kuldiga (about 15,000), and would also improve communication between Talsi (Talcen) and Leepaja.

At present transit traffic between these towns is carried on by means of horse transport and is most inadequate. A continuation of the line from Saldus to Ielgava (about 83 km. in length) will afford a cheap and convenient means of export for the produce of Saldus to Ielgava and Riga.

From a social and economic point of view the whole of this district is very highly developed ; it is, moreover, thickly populated, most fertile, and its commerce and industry are particularly flourishing.

Again, the possibility of exporting timber from this district—which at present is about 25.30 km. from a railway—to the ice-free port of Leepaja, near the frontier, will considerably raise the value of the timber, and, therefore, increase the prosperity of the line ; its yearly traffic output will amount to 12,000,000 poods (195,000 tons).

5. *Administration of the Latvian Railway System.*—In organising the permanent administration of the Latvian railways, the principle adopted was the establishment of a single Administration, one person being held responsible for each centre. On this principle, the head of each main section manages his own line and all its branches ; the system is divided into five such main sections. The central organisation of the railway administration is called the “Principal Administration” ; it is controlled by a General Director and consists of the following departments: General, Technical, Financial, Administrative and Supply. The directors of the main sections are subordinate only to the General Director ; the principal workshops also form independent units—one at Leepaja and the other at Riga—and the directors of these are also subordinate only to the General Director.

6. *Condition of Rolling-stock and Repair of Locomotives.*—As the Latvian Railways once formed part of the Russian railway system, and as they will still serve the transit traffic of Russia and the countries formed from the territory of former Russia, it is obvious that the same type of rolling-stock must be used as was employed before the war. This is all the more necessary in that such rolling-stock of the Russian gauge as Latvia possessed was derived from the Russian railway system. Before the war Russia possessed 38 locomotives for every 100 versts of line. The average distance per month covered by each engine was about 31.00 versts ; 31 different types of engine were used over an average of 1,500 km. of line. Of these engines 50 % were of obsolete type and worn out ; 30 % of them had been more than 25 years in service. Such conditions as these did not conduce to the success of the railway system or to its financial stability. The average load of the trains diminished and the expense for the upkeep and repair of these locomotives increased, as did also the number of isolated far as types. It became necessary, therefore, to provide the Latvian railways as possible with locomotives of a uniform type, as only in this way could these be profitably worked. The type of locomotives required should possess 5 axles (Decapoa) in the case of goods locomotives which may also be used for heavy passenger traffic. The diameter of the coupled wheels should be about 1,450 mm. and the total weight about 70.5 tons ; hauling-power 14,000 kilogrammes. Reckoning as state above that 38 locomotives are required per 100 versts, 330 locomotives of Russian gauge and about 280 locomotives of normal European gauge would be required by Latvia under pre-war conditions of traffic. All sections of the system, excepting those which

are to be electrified, must be supplied with coke or naphtha if the cost of wood fuel is more than the Government can afford ; but apart from the price of fuel, it is probable that the most economic type of locomotive would be that fitted with a petrol engine (Diesel type).

The types and number of locomotives, and the repairs necessary, are shown in the following table.

A. Stock of Locomotives on July 1st. 1921.

Gauge	Type	Number	In working order	Awaiting repair	Remarks
Russian gauge (1.524 m)					
Passenger	4-6-0	18	8	10	
—	2-6-0	14	5	9	
—	2-6-2	2	—	2	
Goods	2-4-0	1	1	—	
—	0-6-0	14	10	4	
—	0-8-0	95	41	54	
Total...		144	65	79	
Normal European gauge (1.435 m)					
Passenger	4-4-0	17	11	6	
—	2-4-2	3	1	2	
—	2-4-0	1	1	—	
—	2-6-0	4	2	2	
Goods	0-6-0	16	10	6	
—	2-6-0	15	5	10	
—	2-8-0	2	2	—	
—	0-8-0	7	6	1	
Total...		65	38	27	
Narrow gauge, 750 m/m...					
—	0-8-0	3	2	1	
—	0-6-0	5	3	2	
—	0-4-0	5	5	—	
Total...		13	10	3	
Narrow gauge, 600 m/m...					
—	0-8-0	42	23	19	
—	0-3-0	11	7	4	
—	0-4-0	5	4	1	
Total...		58	34	24	

B. Condition of Locomotives and Nature of Repairs.

Average number of days per month for repair of one locomotive	Average number of locomotives under repair per month.	Remarks.
Russian gauge (1.524 m) 14.0	1.4	The chief repairs are connected with motion and boilers.
Normal Europ. gauge (1.435 m) 6.1	1.9	
Narrow gauge (750 m/m) 3.0	1.6	
Narrow gauge (600 m/m) 6.8	1.7	

Before the war the number of goods trucks was 8.7 per verst on the Russian railways (excluding tank-wagons). Taking this as the average for the Latvian railways, the rolling-stock would amount to 10,000 per 1,135 km. (Russian gauge), and 6,500 per 740 km. (European gauge). The number, type and condition of the present Latvian rolling-stock is given in the following table.

C. Rolling-stock (July 1st, 1921).

Type of Coaches	With brake	Without brake	Total	With 2 axles.	With 3 axles.	With 4 axles.
Passenger Coaches.						
1) Russian gauge	214	—	214	52	96	66
2) Normal European gauge . .	107	1	108	25	80	3
3) Narrow gauge	15	—	15	—	—	15
— — — — —	53	2	55	—	—	55
Goods Trucks.						
1) Russian gauge	727	3,182	3,909	3,877	—	32
2) Normal European gauge . .	195	572	767	766	—	1
3) Narrow gauge	22	171	193	—	—	193
— — — — —	100	1,051	1,151	485	—	666

D. Condition of Rolling-stock and Repairs Required.

Type of Stock	Average time per wagon required for repairs.	Average number of wagons to be repaired per month.	Remarks.
Passenger Coaches.			
1) Russian gauge	1,524 m/m	13 coaches	Chiefly repairs of motion and internal works.
2) Standard European gauge.	1,435 m/m	21	
3) Narrow gauge	750 m/m	—	
—	600 m/m	—	
Goods Trucks.			
1) Russian gauge	1,524 m/m	96 coaches	Chiefly repairs of motion.
2) Standard European gauge.	1,435 m/m	56	
Narrow gauge	750 m/m	5	
—	600 m/m	10	

The load of most goods trucks with two axles is 16.38 tons per tare of 7.21 tons; the tare coefficient therefore is 0.44.

Details of staff and passenger traffic on the Latvian railways will be given later.

Generally speaking, the railways are in quite a satisfactory condition with the exception of a few sections amounting to about 150 km., where the rails, which are of a short type are very worn and need to be immediately replaced. It is proposed to spread this work over a period of 5 years, repairing 30 kilometres of line every year and replacing the worn-out rails by those of the second line, previously removed.

The rails are laid on wooden sleepers with iron chairs. The number of sleepers on the different sections of the line varies from 1,400 to 1,500 to each kilometre. The total number of sleepers on all the principal lines amounts to 2,441,000, of which 1,452,000 have been treated and in use since 1906; the newest were laid down in 1907, so that a portion of the sleepers have been in use for fifteen years, although normally their period of utility should not exceed ten years. Sleepers which have not been treated and which should not be used for more than five years have been in use for about 12 years; this abnormal state of affairs is explained by the foregoing reasons, that is to say, by the non-renewal of the sleepers. Although the repair of the running track has involved considerable work and expense, a normal utilization of sleepers has not yet been attained.

Ninety-thousand sleepers need to be renewed during the present year, and it is proposed to utilise a similar number next year, whilst 50,000 will need to be replaced annually during the following years.

This calculation is based on the employment of non-treated sleepers, as at present there are no factories for making treated sleepers in Latvia, those which existed formerly having been transferred to Russia. As soon as these factories are reconstructed, the quantity of sleepers to be replaced will be reduced by half; it is, moreover, proposed to replace wooden by steel sleepers in the future.

The ballasting of the railway lines is generally satisfactory, as the work of upkeep was carried out under normal conditions last year, except in the case of certain sections on secondary lines which will in any case be included in the programme of work for the present year.

The gradients on the track do not exceed 0.008, with the exception of the Plavinas Vecgulbene section, which has a gradient of 0.016; this line has been transformed from 0.75 m. to the Russian gauge.

The work necessary for lowering this gradient has been postponed owing to financial difficulties.

The smallest radius of curvature on the lines in use is not higher than 500 metres; it varies from 350 to 400 metres in the case of the lines which were laid down during the war. Lines which have a gauge of 0.75 metres possess a sufficiently strong superstructure, whilst the lines with a 0.60 metre gauge are only secondary. The rails on the 0.75 metre lines weigh from 11 to 15 lbs. per foot and are from 28 to 35 feet in length. They are laid on wooden sleepers, with an average number of 1,500 to each kilometre. The renewal of the latter is dealt with in a manner similar to that employed for the broad-gauge track.

The state of the lines and their ballasting is in every way satisfactory. The gradients amount to 0.016, the smallest radius of curves not exceeding 300 metres.

* * *

Very considerable damage was done to railway buildings during the war ; the following table will show its extent :—

(a) Official buildings on the lines and staff quarters, completely destroyed	17 %
(b) Buildings for use of passengers, and platforms	14 %
(c) Hangars for goods, and ramps	22 %
(d) Other buildings	20 %

The value of the buildings, allowing them to possess 60 % of their original value, represents to-day :

(a) Official buildings, staff quarters, etc.	3,300,000	gold roubles
(b) Buildings for use of passengers and platforms	1,420,000	» »
(c) Hangars for goods, and ramps	1,270,000	» »
(d) Other buildings	4,500,000	» »
Total	10,490,000	gold roubles

Pre-war value :

10,490,000.000

60

= 17,485 gold roubles.

To reconstruct everything that has been destroyed, the following sums would be required.

(a) Official buildings, staff quarters, etc.	1,330,000	gold roubles
(b) Buildings for use of passengers, and platforms	465,000	» »
(c) Hangars for goods, and ramps	685,000	» »
(d) Other buildings	2,740,000	»
Total.	4,740,000	gold roubles

Thirty-five per cent. of the total number of buildings were in need of repairs, only one-third of which were carried out. The most urgent work was carried out in 1920.

In 1921 the following sums will be necessary for reconstruction work, apart from upkeep and repairs :

Reconstruction of 35 % of the office buildings, staff quarters, etc.	440,000	gold roubles
Reconstruction of 66 % of passenger buildings and platforms.	300,000	» »
Reconstruction of 33 % of goods hangars and ramps	228,000	» »
Reconstruction of 20 % of other buildings	450,000	» »
Total.	1,418,000	gold roubles

A further sum of 2,800,000 gold roubles will be needed for the reconstruction of all the buildings destroyed, which will be taken in hand after the termination of the programme proposed for the current year.

In addition to the above works it is indispensable to :

1. Replace immediately the loading cranes in the maritime stations of Riga, Leepaja, Ventspils and Mangali (lifting capacity 65 to 5 tons). Twenty-two cranes are needed.

2. Re-lay some tens of kilometres of sidings.

3. Instal weighing machines for trucks, turntables for locomotives, etc.

Total cost involved 654,000 gold roubles

The weak point of the Latvian railways is the unsatisfactory state of the watering stations and reservoirs. In 86 buildings of this kind the following plant was destroyed, or evacuated to Russia : 47 boilers, 57 pumps and 27 reservoirs. After deducting what has already been repaired, 151,700 gold roubles will have to be spent to re-establish normal conditions.

It is proposed subsequently to construct 60 kilometres of sidings lines, etc., making a total expenditure of 200,000 gold roubles.

BRIDGES.

Total number of Bridges on the Latvian Railways.

(a) On the normal and Russian gauge lines :

Steel bridges	5,048 metres
Wooden bridges	2,719 "
Cement and iron bridges	1,157 "
Stone, cast iron and wooden viaducts	467 "
(b) On narrow-gauge lines	7,202 "

During the war 75 to 80 % of these bridges were destroyed, some of them on more than one occasion. Sixty per cent. of the total number have been rebuilt and the remainder will be replaced in 2 or 3 years. The following, which have not been rebuilt, are not included in those mentioned above.

Bridge across the Dvina near Ventspils.	260.39 metres
" " " " " Daugaopile	264 "
" " " " " Buldubi	281.38 "
" " " " " Jugla	63.9 "

The cost of rebuilding the above bridges is calculated at 1,200,000 gold roubles, and the work will be spread over two periods of three years.

The following table shows the quantity of rolling-stock per km. at present available in comparison with 1914.

	On 1/7/21 in Latvia		In 1914		In Denmark in 1919		In Finland in 1914	
	Loco- motives	Wagons	Loco- motives	Wagons	Loco- motives	Wagons	Loco- motives	Wagons
Russian gauge	0.127	0.18	0.26	0.22	—	—	0.14	0.32
Passengers		—		—	—	—		—
Goods		3.4		8.2	—	—		4.13
Normal gauge	0.088	0.15	—	—	—	0.84	—	—
Passengers		—	—	—	—	—	—	—
Goods		1.04	—	—	0.6	6.00	—	—
Average per kilo- metre	0.110	2.35	0.26	7.4	0.6	6.1	0.14	4.5

If we take as a basis the normal figures of pre-war traffic, assuming the minimum number of locomotives required at 0.26 per Km., and deducting those which are being worked, 400 more locomotives are required for normal service on the broad-gauge railways.

To make up the normal number of wagons (7/4 per km. before the war) about 10,000 goods trucks and a large number of passenger coaches would be required.

State of Rolling-stock.

Period	Wagons under repair	Wagons in use	Locomotives under repair	Locomotives in use
1/IX/1919	54.5 %	45.5 %	52 %	48 %
1/IX/1920	19.0 %	81.0 %	34.0 %	66 %
1/III/1921	21.0 %	79.0 %	31.0 %	69 %

This table shows that there is a considerable increase in the number of locomotives and wagons in comparison with 1919. It must be remembered that the lack of reserve spare parts results in an increase on the amount of rolling-stock under repair, and that the diversity of types of locomotive occasions great difficulty in the manufacture of these spare parts.

The "useful" load of goods trucks with two axles amounts to 16.38 tons; the tare to 7.21 tons; the co-efficient of the tare, 0.44.

There are only 14 repair shops for upkeep works; the most important ones are situated at Riga and Leepaja. The total number of workmen

is 2,659, with 483 machine-tools, of which 421 are for working metal, and 62 for working wood.

The working day is eight hours ; some workmen do piece-work, and others work by the day.

Work per Month.

1. Repairs : 2 locomotives, 8 passenger coaches, 80 goods trucks.

2. Works of upkeep : 200 locomotives, 12 passenger coaches, 1,000 goods trucks.

Record of Locomotives in 1920.

	Standard gauge 1.435m/m	Russian gauge 1.524m/m	Light Railway 600 m/m	Light Railway 750 m/m
	kilometres	kilometres	kilometres	kilometres
(1) Average distances covered by each locomotive per month :				
(a) with trains	128,000	81,000	45,000	18,000
(b) without trains	8,300	6,000	—	—
(c) shunting	24,000	21,000	—	—
(d) in reserve	9,500	6,000	—	—
(e) total distance	170,000	110,000	50,000	20,000
(2) Average daily run of a locomotive	88.0	107.0	28.7	61.2
(3) Average daily run of a working locomotive	130.0	180.0	—	—
(4) Number of locomotives . .	65	34	58	13

Comparing these facts with the reports on the Riga-Orel Railway (formerly Russian), it may be noted that in peace time there was one locomotive for every 71.5 to 96 kilometres.

These figures show the great extent to which locomotives are worked at the present time in spite of their diminished capacity, which has become evident not only in Latvia, which has undergone the horrors of war and of Bolshevik rule, but also in other countries.

In 1920, out of 100 locomotives, there were :

4.16 without trains, 24.86 on shunting work, and 7.17 in reserve, leaving about 64 for ordinary service.

Use of Wagons in 1920 (in axle-kilometres).

	Standard gauge 1.435 m/m	Russian gauge 1.524 m/m	Narrow gauge 600 m/m	Narrow gauge 750 m/m
(1) <i>Passenger Coaches.</i>				
(a) Number of coaches	108	185	40	15
(b) Number of axles (coaches)	302	439	160	58
(c) Number of seats in carriages	4,458	7,177	800	408
(d) Average axle km. per vehicle per month . . .	2,400,000	1,620,000	250,000	190,000
(2) <i>Goods Trucks.</i>				
(a) No. of trucks	768	2,379	587	183
(b) No. of axles	1,538	4,786	2,148	718
(c) Average axle km. per vehicle per month . . .	2,400,000	2,800,000	1,100,000	280,000
(3) <i>Co-efficient of journeys per vehicle</i>	3.00	6.00	—	—

The high coefficient for the average journey per goods truck on the Russian gauge is explained by the fact that there is great lack of them on the broad gauges.

Record of Trains (in train-kilometres).

	Standard gauge	Russian gauge	Narrow gauge 600 m/m	Narrow gauge 750 m/m
1) Average journey per train per month :				
a) Passenger trains	90,000	56,000	16,500	14,800
b) Goods trains	30,500	18,500	24,000	1,800
c) Trains for transport of railway material	7,500	5,000	4,500	1,000
d) Total	128,000	80,000	45,000	17,600
2) Average no. of trains per month :				
a) Passenger trains	1,200	360	300	180
b) Goods trains	750	700	900	160
c) Service trains	150	140	200	60
d) Total	2,100	1,200	1,400	400
3) Average no. of coaches per train :				
$\frac{\text{No. of wagons.}}{\text{No. of axles.}}$				
a) Passenger	$\frac{6.52}{13.19}$	$\frac{9.61}{19.35}$	$\frac{4.14}{16.56}$	$\frac{3.62}{14.48}$
b) Goods	$\frac{17.72}{35.73}$	$\frac{25.00}{50.14}$	$\frac{7.3}{28.12}$	$\frac{7.54}{30.16}$
c) Mixed	$\frac{11.99}{30.40}$	$\frac{23.00}{48.38}$	$\frac{5.77}{23.08}$	$\frac{7.00}{28.24}$

The smaller number of coaches on passenger trains is explained by the fact that this table includes excursion (*trains de plaisir*) and suburban trains, which generally consist of a smaller number of coaches, and also by the lack of locomotives. The following data give further details regarding the work of the railways in general :

1. *Passenger Traffic.*

(a) Number of passengers carried 1920	5,700,000
(b) Average number of passengers carried per month	470,000
(c) Number of passenger-kilometres per year	365,000,000
(d) Average number of passenger-kilometres per month	30,000,000
(e) Distance of average length of journey per passenger	73 km.
(f) Number of passengers as compared with capacity of trains	88-120 %

2. *Goods Traffic.*

(a) Tonnage of goods carried in 1920	1,229,500
(b) Average tonnage per month	103,780
(c) Ton-kilometres per year	131,109,600
(d) Do. do. per month	10,925,800
(e) Average tonnage transported per kilometre	106.6
(f) Average no. of wagons necessary for daily traffic	2,000
(g) Number of loaded trucks	600

3. *Luggage.*

(a) Tonnage of luggage transported per year	35,050
(b) Average amount of luggage transported per month	2,900

The above data points to a great scarcity of passenger coaches, the number of which was increased by 100 goods wagons which were adapted for this purpose.

Goods transport is in an even less satisfactory condition ; only 30.3 % of the total number of wagons necessary for the transport of goods are available for daily traffic requirements.

The following table gives the amount of fuel used in 1920 on trains, in buildings, stations, etc.

Fuel.

Gauge.	Average consumption of wood over 100 engine-kilometres (cubic metres).	Consumption for 1920 (cubic metres).	No. of locomotives	Remarks
Locomotives of Russian gauge	12.7	164,000	34	1) 9,65 cubic meters = 1 cubic sagene.
Locomotives of standard gauge	11.1	226,000	65	
Locomotives of narrow gauge, 600 m/m	7.0	42,000	58	2) The coal equivalent of 1 cubic sagene of wood is 110 poods of coal; 1 cubic metre of wood = 11,4 poods of coal; 100 cubic metres of wood = 18,67 tons of coal.
Locomotives of narrow gauge, 750 m/m	8.3	20,000	13	
Total consumption of locomotives	—	452,000	—	
Various requirements	—	148,000	—	3) Towards the end of 1920 a cubic metre of wood cost from 105 to 267 Latvian roubles.
Total		600,000 (representing about 85,000 tons of coal).		

When the traffic is increased to pre-war standards, it is anticipated that the consumption of coal will amount to 400,000 tons per annum; should it be impossible to obtain this, it will be necessary to cut down annually about 8,000 hectares of forest, but this consumption of wood would seriously affect the timber resources of the country, which lacks coal of its own, while imported coal would be too expensive. In these circumstances various sections must be electrified as soon as possible; for this purpose the very considerable hydraulic power of the Western Dvina will be exploited.

* * *

On January 1st, 1921, the permanent railway staff, including that of the railway administration, amounted to 8,527 (4.7 per kilometre).

Day Workers	7,138
Total	15,565 (8.07 per kilometre)

Average pay of workers	per hour :	5 r. 50 cop.
Average pay of day workers	per hour :	4 r. 00
Average pay of engine drivers	per month	1,500 roubles.

The pay of the staff increased by 85 % between January 1st, 1920, and January 1st, 1921.

* * *

Passenger fares in 1920 :

Third class per kilometre	24 cop.
Second class	48 cop.
Children from 5-10 years of age, half price.	

Transport of luggage :

10 lbs. for each kilometre	2.25 cop.
First-class goods per kilom.	4. cop. (1 poud)
Second-class " " "	2.8 cop. "
Third-class " " "	1.8 cop. "
Fourth-class " " "	1.32 cop. "
Fifth-class " " "	0.96 cop. "
Sixth-class " " "	0.72 cop. "

Starting from January 1st, 1921, passenger rates were increased by 50 % and luggage rates by 100 % ; the goods rates were increased by 100 % on February 1st, 1921.

Results of the working of the railways from January 1st, 1920, to January 1st, 1921.

Receipts :

(1) Passenger transport	89 mill. r. = 35 %
(2) Luggage transport	22 mill. r. = 9 %
(3) Goods transport	135 mill. r. = 51 %
(4) Receipts from various sources	14 mill. r. = 5 %

Total :	260 mill. r. = 100 %
Expenses	335 million roubles.

This deficit of about 75 million roubles is explained by the low rates, which the Government refrained from increasing with a view to facilitating the recovery of the economic life of the country.

The increase of 85 % in the cost of labour increased in its turn the cost of fuel and of various materials ; for this reason expenses are higher than receipts.

In the working budget for the present year no provision has been made to meet this deficit. Although the Latvian railways are the property of the State, it was decided to consider them as a commercial undertaking from the purely economic point of view.

It is obvious that the expenses for restoring buildings, bridges, workshops, etc., cannot be covered by current receipts ; for this purpose the State is opening special credits.

Proposed Plan for Electrification.

The question of electrifying the Latvian railways has been carefully considered by the Railway Administration ; as has been shown above, the working of the system necessitates the consumption either of 600,000 cubic metres of wood, costing 28,200,000 Latvian roubles, or of 85,000 tons of charcoal imported from abroad at a cost of 103,700,000 Latvian roubles (at 20 roubles per pood). There is little likelihood that such a quantity of charcoal could be obtained under existing conditions. On the other hand, the river Dwina in Latvia possesses hydraulic power estimated at 396,000 h. p. At Dole, near Riga, there is a waterfall of 12 metres, the force of which is estimated at 65,000 h. p. ; at Kegum there is another fall of 15 m., giving 85,000 h. p. ; at Ashradan another of 9 m., estimated at 36,000 h. p. ; at Kokneje another of 21 m., estimated at 120,000 h. p. ; at Aivuaja another of 15 m., giving 42,000 h. p. ; at Jebrabmeests another of 5 m., giving 18,000 h. p.

The electrification of the railway by means of this water-power would prevent the destruction of national forests and would reduce to a minimum the import of charcoal, which is for Latvia an economic question of supreme importance.

In view of the urgency of the matter, the Administrative authorities of the Latvian railways estimated and analysed the cost of, and advantages to be gained by, the electrification of their system.

II.

MARITIME AND WATERWAY NAVIGATION.*Summary of Situation of Latvian Ports before the War and at present.*

Before the war the port of Riga was one of the most important, chiefly as regards the timber trade. Situated at the mouth of the River Dwina on the Baltic Sea, it extends 26 km. from the river mouth. The navigable channel at the entrance of the jetties has a depth of 9 metres ; in the port itself the depth is only from 7 m. to 8.50 m. The central part of the port is situated in the town of Riga at a distance of 13 km. from the mouth, and its inner part is bounded by the railway bridge. The section of the port situated above this bridge is shallower and is consequently not accessible to ocean-going vessels. It was used largely for the timber trade and had anchorage for about 16,000 rafts. The quay sides extend to a length of about 3,200 metres, almost the whole length of which is connected with the railway. Along these quays are numerous warehouses and sheds. At the customs house there are four sheds covering an area of 8,100 sq. metres with a capacity of 23,000 tons.

On the island of Andrea there is a grain elevator with a lifting capacity of 12,000 tons, a refrigerator with a capacity of 400,000 barrels, large herring depots, 9 warehouses of various dimensions, and other buildings with a total capacity of 50,000 tons.

There also exist in the export port some 17 warehouses with a capacity of 80,000 tons. Apart from these quays, situated in the central part of the port, the latter also possesses accessory quays more than 20 km. in length used to a certain extent by sea-going shipping, but principally for the prosperous industries of Riga and for coal transport. The largest of these accessory unloading quays are situated at Mullgrave and Bolderay, near the mouth of the river. They are also in direct connection with the railway, and at Mullgrave there are 12 warehouses for coal transport with a capacity of 30,000 tons. Besides the warehouses already mentioned, which are situated near the quays, there are others in the town itself which belong to private individuals. Amongst these, 43, with a total capacity of 120,000 tons, are called the Red Warehouses. These warehouses were once used for flax and hemp, but shortly before the war, when the railway system was reconstructed, they ceased to be used for this purpose.

In the year of the outbreak of war the export quays had begun to increase in size very considerably, and a beginning was made with the construction of warehouses several stories in height. This work, however, was stopped by the war.

The port of Riga was very short of cranes, and vessels had to load and unload their cargoes from their own resources. For particularly heavy loads there were three quay cranes with a lifting capacity of 10 to 25 tons,

and a floating crane with a lifting capacity of 66 tons. The construction and repair of vessels of small tonnage was undertaken by a certain number of small shipbuilders. For the repairing of larger vessels there was a floating dock with a capacity of 3,000 tons.

During the winter months the Dvina was kept open for navigation by means of several ice-breakers. A special ice-breaker existed in case the Gulf of Riga should become ice-bound.

* * *

The two other ports of Latvia, Wentspils and Leepaja, are situated on the east of the Baltic Sea. Before the war they were the only Baltic ports in the west of Russia which were free of ice in all seasons. The first is situated at the mouth of the River Wentā. It includes a large outer port surrounded by dykes, and the port itself, which is formed by the mouth of the river of the same name. The River Wentā, for the first 4 kilometres from its mouth, is 7,501 metres in depth. At a distance of 16 km. from its mouth it is accessible to vessels drawing 6 metres. Before the war the depth at the entrance of the dykes was more than 9 metres. As at Riga, the upper part of the river Wentā was used as a port for timber, with this difference, however, that here vessels had direct access to the rafts and timber yards. The lower part of the river was used for maritime navigation. The left bank, which was connected directly with the town, was used for local inland water transport, while the right bank was used for import and export trade. It was here that the customs house was situated, the quays of which were 650 m. in length, and the quay reserved for export 1,200 km. in length. The customs quays, and also those port quays reserved for export, were provided with warehouses; the export quay in particular was plentifully supplied with these. The capacity of these warehouses amounted to as much as 170,000 tons.

There was also a grain elevator, with a capacity of more than 50,000 tons, a refrigerator, and several cold-storage chambers for perishable goods, one of the refrigerators having a capacity for 400,000 barrels of oil. Moreover, the right bank was provided with numerous railways. In view of the remarkable development of the port of Windau in the 10 years which preceded the war, and also in view of the fact that almost the whole of the right bank was used for commerce, a beginning was made shortly before the war with the adaptation of the left bank for commerce, in the direction of the town, and it was proposed to build a railway there. But the war prevented the completion of a railway bridge across the river and the quays called "American quays", of which only the submerged part was built. As regards cranes, the port possesses only two quay cranes with a lifting power of 15 to 46 tons.

* * *

Leepaja, the most southern port of Latvia, is situated on the canal which connects Libau with the Baltic Sea. Before the war the port of

Leepaja consisted of a military port and a commercial port. The latter included the canal properly so called, which was termed the winter port, and the shore of the anchorage, which was protected almost everywhere by stone dykes with a length of more than 5,500 metres.

Before the war the depth at the entrance of the dykes and breakwaters was about 9 m. 50 ; along the quays of the anchorage it varied from 8 m. to 8 m. 50, and along the canal and in the winter port, from 6 to 7 metres. As the port of Libau was subject to the military regulations governing fortresses, building of any kind in the winter port and on the shore of the anchorage was prohibited, as was also the construction of temporary sheds. Warehouses belonging to private persons, such as herring depots and elevator plant, were all situated on the two banks of the canal. The total capacity of these warehouses amounted to about 174,000 tons. There were also in the town, near the port, numerous warehouses with a capacity of 82,000 tons. This figure did not include the elevators and herring depots, which had capacities respectively of 160,000 barrels and 16,000 tons. Besides several small cranes, the port possessed for commercial purposes a floating crane with a lifting power of 35 tons, and a travelling crane for unloading coal. Shortly before the war the Russian Government decided to make Libau a free port, and intended to build new unloading quays and to provide them with up-to-date equipment ; the outbreak of war, however, put an end to all these plans.

At present the former military port of Libau may be used for commercial purposes. Besides the anchorage, which is protected by breakwaters, the military port included a deep channel connected with two basins which contained large workshops and two large dry docks. The banks of the canal are as yet unprovided with quays, but the stone quay of one of the basins, which has a length of 700 m., can at once be utilised for the coal trade, while the barracks could without difficulty be transformed into warehouses.

The entrance to the military port is everywhere from 9 m. to 9.50 m. deep. As regards cranes, the port contains a powerful floating crane with a lifting power of 130 tons.

The sea route to the ports of Latvia is quite safe. It is marked by numerous lighthouses, the most important of which are those of Libau, Riga and Windau. All the other lighthouses are situated along the coast of Latvia, with the exception of one which stands at the southern point of the island of Esel.

Of these three ports Windau has suffered most. The principal quays and the two cranes have been blown up. Costly machinery, such as elevators and refrigerators, has been removed ; dykes have in several places been destroyed. The elevator and refrigerator buildings, however, and also most of the warehouses, are almost intact, and require but little repair. The depth of the navigable entrance to the river has not decreased. Silting has only taken place in the outer port, particularly at the bar situated at the entrance of the port ; the depth of this was formerly 9 m., but is now no more than 5 ; a dredger of average power would enable the sand to be removed in a few weeks. Moreover, navigation is hindered by the wreck of a cargo vessel which foundered in the outer port. The removal of this

wreck would not offer great difficulties if the necessary equipment were available. The port of Libau suffered very little during the war ; all that is required is to make certain repairs to buildings which have been neglected. Although a certain decrease may be noticed in the depth of the navigable channel, the port is accessible to large vessels. The entrance to the southern part of the port is blocked by several wrecks ; these, however, do not form a serious obstacle, as the port possesses two other entrances. In the military port the workshops alone have suffered.

As regards the port of Riga, its condition is intermediate between those of Libau and Windau. The quays have not suffered in any way ; a few warehouses alone have been destroyed. At present the remaining warehouses in the island of Andrea and those of the export port have a total capacity of 100,000 tons, but almost all the floating docks, floating cranes, ice-breakers and dredgers have been removed from Riga. As a result, the dredging operations necessary to restore the former depth of the navigable channel are greatly hindered. The remaining dredgers and the two vessels provided with dredging pumps are insufficient to enable this work to be carried on with the speed that is desirable. At the present moment, therefore, the port is accessible only to vessels drawing from 6 m. to 6.50 m.

In conclusion, we may say that the Latvian Government is taking most energetic measures to bring the ports again into working order. Besides such repairs as are more or less important, the work of rebuilding the quays, cranes and warehouses which have been destroyed has been begun, but if the floating equipment, particularly the dredgers which were removed during the war, were restored by Russia, it would be possible to carry out the dredging with all necessary speed.

LITHUANIA.

The Proclamation of the Independence of Lithuania took place on February 16th, 1918.

The Constituent Assembly, elected by universal suffrage, held its first meeting on May 15th, 1920.

As a democratic Republic, Lithuania entrusted the legislative power to a single Chamber, and the executive power to the President of the Republic and Council of Ministers.

In accordance with the Treaty of Peace of Moscow of July 12th, 1920, the area of Lithuania is about 85,000 square kilometres (about three times the size of Belgium) with a population of 4,500,000.

The Lithuanians, a separate branch of the Indo-European family, speak a language resembling Sanskrit.

Eighty per cent. of the Lithuanian population, which is chiefly predominantly agricultural, is occupied in farming, cattle-breeding and forestry. The forests cover 20 % of the total area of the country, and yield annually a produce estimated at 2 million cubic metres. One million cubic metres are available for export.

Industry has been destroyed by the war, but tanneries, breweries, distilleries, steam- and water-mills, saw-mills, paper-mills are being reconstructed, while numerous small spinning-mills are being established to deal with the country's abundant yield of flax.

The note circulation consists of Lithuanian marks ("ostmark") and German marks ("reichsmark"), both guaranteed by Germany and both subject to the same rate of exchange.

The estimated expenditure for the Budget of 1920 is 768 million marks.

The revenue is derived from direct taxes on landed property and buildings and from succession duties. Indirect taxation takes the form of excise duties on matches, tobacco and alcohol, fees for export licences, customs duties, etc. The Budget deficit is trifling. (84 million marks).

Lithuania is not burdened with outstanding debts, nor with war debts properly so called.

From the economic point of view, Lithuania is a comparatively rich country.

The grave difficulties by which she is faced are of a political nature, and are due to the occupation of the south-eastern part of the country by

Polish regular troops and by rebel troops (commanded by General Zeligowski).

On the other hand the productive capacity of Lithuania is diminished by the artificial barrier which separates the territory of Memel (now under the provisional administration of the Allies) from the mother-country, and thus deprives Lithuania of her natural maritime outlet to Western Europe.

I.

RAILWAYS.

A. STANDARD-GAUGE RAILWAYS.

(1) *Length of Track.*—On the territory of Lithuania, as determined by the Treaty of Peace of Moscow of July 12th, 1920, between Russia and Lithuania, the length of standard-gauge track is as follows:—

Lines built up to 1913	1,621 km.
Lines built during the German occupation of Lithuania . . .	299 »
Total	1,920 km.

All railways belong to the State.

(2) *Lines of International Importance.*—The chief railway-lines which cross Lithuania are the following:—

(a) Berlin, Insterburg, Eydtkuhnen, Virbalis, Kaunas (Kovno), Vilnius (Vilna), Dvinsk, Petrograd.

(b) Vienna, Warsaw, Vilnius (Vilna), Dvinsk, Petrograd.

(c) Libau, Sauliai, Radviliskis, Dvinsk, Moscow, (in bad condition from a technical point of view).

(d) Koenigsberg, Insterburg, Kaunas (Kovno), Vilnius (Vilna), Minsk, Komel, Crimea.

(e) Berlin, Koenigsberg, Insterburg, Tilsitt, Sauliai, Mitau, Jakobstat, Kreizburg, Stockmanshof, Pskof, Petrograd.

(3) *Length of Lines at present operated by the Lithuanian Government.*—Since the recent occupation of the south-eastern part of Lithuania by the regular troops commanded by General Pilsudski, and by the rebel troops under General Zeligowski, the Lithuanian Government has only administered 943 kilometres out of 1,920 kilometres.

(4) *Staff.*—The staff employed on the railway lines in operation in 1913, that is to say, on 1,621 kilometres, consisted of 17,666 persons, an average of about 11 employees per kilometre.

On December 31st, 1920, the staff employed on the railway system of 943 kilometres numbered 4,493, an average of 4.8 employees per kilometre.

After the evacuation by the German troops of occupation (1918), the Lithuanian Government, when resuming control of the railways, had great difficulty in providing competent staffs, since the majority of Lithuanian railway employees were in Soviet Russia. The peace with Russia has made possible the return, amongst others, of railway experts, and the railway staff is now nearly up to requirements.

(5) *Track*.—The ballast on the whole railway-system is sufficient, and of excellent quality, except on the Vilnius (Vilna) Lida line, where the gravel is too light; here it requires complete renewal.

The sleepers are in bad condition, for they have been left in disrepair throughout the war.

The maintenance of the whole railway-system requires about 400,000 specially-treated sleepers a year.

The system which is being operated by the Lithuanian Government requires about 200,000 sleepers a year. All the factories for treating sleepers have been destroyed. A new factory, which is being built, with a capacity of 200,000 sleepers, will be opened in March 1921.

Track plant: cross-overs, sleepers, points, etc., are in good condition.

The condition of signals on the line is satisfactory.

(6) *Permanent Works*.—Thirty per cent of the stations were destroyed during the great war in the fighting between the Russian and German Armies, or by the Polish troops during their retreat after the last battle with the Red Army. On the territory not occupied by the Polish troops and administered by the Lithuanian Government, the ruined stations have been provisionally rebuilt. As for such stations as were not destroyed, no work was done on them throughout the war, and they require thorough repair; the Lithuanian Government is carrying out the most necessary repairs so far as its means permit.

All the railway-bridges are temporary (of wood) and require immediate reconstruction, except on the line Virbalis-Kaunas (Kovno)-Vilnius (Vilna) where they are of metal and in good condition.

(7) *Rolling stock*.—In 1913, the rolling-stock on the present Lithuanian system was as follows (broad gauge):—

Express locomotives	85
Goods and shunting locomotives	510
First-class coaches	51
Mixed first and second-class coaches	34
Second-class coaches	136
Third-class coaches	425
Fourth-class coaches	85
Saloon coaches	17
Baggage vans	34

Postal vans	20
Special coaches for the transportation of criminals.	17
Covered goods trucks.	10,200
High-sided flats	170
Flats	3,400
Tank waggons.	6
Special waggons	1,350

All this rolling-stock was carried off or partially destroyed by the Russian Army during its retreat.

When they were in occupation, the Germans transformed the broad-gauge lines into standard-gauge lines, and used their own rolling-stock on the Lithuanian lines until their evacuation at the end of 1918; they then carried off their own rolling-stock, but allowed the Lithuanian Government to hire about 30 engines and a certain number of coaches and trucks in very bad condition.

The Lithuanian Government is making great efforts to cope with the serious shortage of rolling-stock. Thirty locomotives have been ceded under the terms of the armistice.

Under the agreement entered into in December 1919 between General Niessel, of the Allied Military Mission, and the German Railway Administration, Lithuania was to receive 88 engines and 1,400 waggons, but Germany has only handed over 58 engines, and 889 waggons (passenger coaches and goods trucks).

The Government has been completing its rolling-stock as best it could with the resources at its disposal, and, on December 31st, 1920, possessed :

Express locomotives	26
Goods and shunting locomotives	89
Mixed first- and second-class coaches.	16
Third-class coaches	113
Fourth-class coaches	14
Saloon coaches	3
Baggage vans	24
Postal vans	6
Covered goods trucks	552
High-sided flats	189
Flats	454
Tank waggons.	11
Special waggons	11

(8) *Repair Shops*.—In 1913 there were two central workshops on Lithuanian territory: one at Vilna (Vilnius), for repairing locomotives, and the other at Kovno (Kaunas), for repairing waggons and coaches. These workshops were very well equipped with machinery, tools, and materials, representing a sum of about 5,000,000 gold roubles.

During the war, these workshops, like the depot workshops, were destroyed.

The Lithuanian Government has re-established repair shops for waggons and coaches at Kovno (Kaunas), and they have set up repair shops for locomotives at Chavli (Sauliai), but owing to limited resources, the equipment of these shops is very inadequate.

(9) *Fuel*.—The question of fuel is one of the chief difficulties in railway operation. The amount of coal necessary for all the lines is from 120,000 to 140,000 tons per year, or about 80,000 tons for the line at present operated by the Lithuanian Government.

In view of the present international coal situation, the Lithuanian Government is still unable to procure this small quantity of coal, except at excessive prices, and is therefore obliged to run its locomotives on wood, although the cost price of this fuel is also high, not to mention inconveniences in operation.

On December 31st, 1920, the stock of fuel was as follows: 5,000 tons of coal and 10,000 cubic metres of dry wood.

(10) *Results of Operation.*

In 1913.

Gold roubles

The gross receipts of railways on Lithuanian territory	24,000,000
Expenses	13,000,000
Net profits, without counting the paying off of capital for construction and improvements.	11,000,000

which means a net profit of:

11,000,000 : 1,621 = 6,786 gold roubles per kilometre.

The receipts (24,000,000 gold roubles) were derived as follows:—

(a) carriage of 889,937 passengers (469,416,500 passenger kilometres)	4,730,000
(b) carriage of baggage (18,664,762 kilometre-tons)	847,885
(c) carriage of goods (by goods-trains) (1,539,010,821 kilometre tons)	18,449,578

In 1920.

German marks

The gross receipts were	52,649,000
Expenses of operation	65,000,000
Deficit for the year 1920	12,350,000

which makes a deficit of:

12,350,000, 943 = 13,096 German marks per kilometre.

The receipts of 1920 were derived as follows:

(a) carriage of 682,000 passengers (47,740,000 passenger-kilometres)	16,690,000
(b) carriage of baggage	4,570,000
(c) carriage of goods (by goods-trains) (66,250,000 kilometric tons)	17,259,000
(d) carriage of the army at a reduced rate	14,130,000

The deficit is due :

(i) To the political difficulties created by the occupation of Southern Lithuania by Polish troops, which obliges Lithuania to remain on a war footing, and in consequence prevents her from making the necessary efforts for a speedy improvement of the economic situation. Military movements seriously impede civilian traffic.

(ii) To the lack of resources for obtaining rolling-stock (principally waggons) in proportion to the economic development of the country.

(iii) To the disorganisation of economic life in the neighbouring States, and particularly in Russia, Lithuania being a country of transit between Western Europe and Russia.

(II) *Estimates*.—In order to restore to their normal condition, the Lithuanian railways necessary for local needs and international traffic — after the economic reconstruction of Russia — the Lithuanian Government estimates that the following expenditure will be required :

	German marks
(a) Reconstruction of bridges which have been destroyed about	30,000,000
(b) Laying out of new route for the railway lines built by the Germans during their occupation, in order to limit the gradients to from 6 to 7 millimetres per metre	25,000,000
(c) Completion of the signalling system, and of the telephone and telegraph system	10,000,000
(d) Reconstruction and repair of stations, warehouses, workshops, stores, water standards, etc., destroyed during the war	30,000,000
(e) Fitting up of repair shops and warehouses	75,000,000
(f) Purchase of rolling-stock :	
60 express locomotives	120,000,000
410 goods and shunting locomotives	738,000,000
540 coaches of different classes	324,000,000
13,000 goods waggons of different kinds	975,000,000
Various materials and spare parts for one year	70,000,000

In fact, to restore the railway lines to a normal condition the necessary sum estimated would be, in round figures, about 2,400,000,000 German marks. This sum does not include the expense of constructing the new lines :

- (1) Memel (Klaipeda)-Telsiai-Chavli (Sauliai) ;
- (2) Kovno (Kaunas)-Polanga and other lines.

B. NARROW-GAUGE LINES.

Length of track lines:

951 kilometres of 60 centimetres track ;

233 kilometres of 75 centimetres track and

16 kilometres of 1 metre track.

In all : 1,200 kilometres of narrow-gauge lines.

596 kilometres are occupied by Polish troops. The remainder is administered by the Lithuanian Government ;

423 kilometres are in operation, and

120 kilometres are not working at present.

The personnel employed, including workmen in repair shops, is about 300.

For the year 1920 the goods traffic was 4,126,424 kilometre-tons.

On December 31st, 1920, the rolling-stock was as follows :—

52 engines, 42 % of them out of action.

671 waggons, 40 % of them out of action.

The operation of these lines requires 60,000 cubic metres of wood or 12,000 tons of coal a year.

Warehouses and workshops are badly equipped and short of machine tools ; to put them into normal condition again would require the investment of a capital of 4,500,000 German marks.

The question of competent staff on these lines presents the same difficulties as on the standard-gauge lines, and these have already been stated.

The Lithuanian Government proposes to build about 400 kilometres of new narrow-gauge lines during 1921-1925, and to abolish certain lines which were built during the war for strategical reasons, and are of no economic importance.

II.

WATERWAYS AND PORTS.

A. WATERWAYS.

I. *General Notes.*—According to the statistics for 1914, the total length of navigable rivers is 5,772 kilometres, of which 3,368 kilometres were used only for the transport of timber rafts. 975 kilometres were used for navigation and the raft-transport. The length of the canals was 93 kilometres (the canal of Augustovo).

Owing to the development of the timber-industry, the above figures are at the present time exceeded, since the rivers which were not utilised before the war now serve for raft-transport.

Almost the whole area of Lithuania lies in the Niemen river basin, except the Northern portion of the country, which is watered by the tributaries of the Duna.

According to the Law of December 11th, 1920, all the waterways are State property, and thus all essential steps can be taken to remove obstacles and other dangers to navigation, while all the work necessary for navigation, irrigation and the employment of water-power is facilitated.

The total length of the Niemen as far as it runs through Lithuanian territory (from the River Bérézina to the village of Smoleninkai) is 667 kilometres. In the territory of Lesser Lithuania, called "The Memel territory", and at the present time under the sovereignty of the Allies, the length of the Niemen (from Smoleninkai to its mouth) is 112 kilometres.

II. *Characteristics of the Course of the Niemen.*—According to the character of its course and of its bed, the Niemen can be divided into six sections, as follows :—

1. From its tributary the Bérézina to the village of Mosti : 158 kilometres.

The river bed and the banks are of a sandy nature.

Breadth : from 50 to 100 metres.

Average slope : 0.00014.

Minimum depth in summer : 0.40 m. to 0.50 m.

Can be used for the transport of rafts.

2. From Mosti to Druskininkai : 155 kilometres.

Breadth : from 60 to 200 metres.

Average slope : 0.00019.

Minimum depth in Summer : 0.70 m. to 0.90 m.

The river bed contains clay. In the neighbourhood of Grodno it is calcareous (pebbly).

Navigable.

3. From Druskininkai to Alytus : 91 kilometres.

The river bed and banks are rocky.

Breadth : 70 to 200 metres.

Average slope : 0.0002.

Average depth in Summer : 0.70 m.

This part of the river is very difficult for navigation owing to rapids and accumulations of stones.

4. From Alytus to Kovno (Kaunas) : 158 kilometres.

The river bed and banks are in part pebbly and in part sandy.

The course of the river is very winding.

Breadth : 70 to 200 metres.

Average slope : 0.00023.

Minimum depth : 0.80 m.

Navigable.

5. From Kovno (Kaunas) to Smoleninkai : 105 kilometres.

In this part the character of the Niemen undergoes a change owing to its tributary, the Vilija (Néris) which, joins it near Kovno (Kaunas). The river bed is partly sandy and partly of clay.

Breadth : 170 to 350 metres.

Slope : 0.00012.

Minimum depth : 0.90 m.

This part of the river is the most navigable and the easiest to improve.

6. From Smoleninkai to its mouth : 112 kilometres.

There the Niemen constitutes the frontier between Germany and Lesser Lithuania (the territory of Memel). It is the only part where the channel has been regularised. Its breadth is not more than 200 metres.

Minimum depth : 1.20 to 1.50 m.

Very favourable for navigation.

The river is navigable for 240 days in the year. The difference between high and low water at Kovno (Kaunas) is about 5 metres.

The most important tributaries are the Néris (Vilija) and the Nevezys.

III. *Canals connecting the Niemen Basin with neighbouring basins.*—The basins connecting with the Niemen are : the basins of the Dnieper, the Vistula, the Pregel, the Vindau and the Duna.

1. The Niemen is connected with the basin of the Dnieper by the Oginski Canal;

2. With the basin of the Vistula by the Augustovo Canal.

3. With the basin of the Pregel by the Friedrichgraben Canal which lies entirely in Germany;

4. While the Koenig Wilhelm Canal connects the Niemen with the town of Memel (Klaipéda).

IV. *The Working of the River Waterways.*—The river waterways are divided among the following districts : Vilna (Vilnius), Grodno (Gardinas), Kovno (Kaunas), and Memel (Klaipéda), each of which has its district characteristics. These districts are closely connected with each other as regards their exploitation.

1. The Vilna District (Vilnius) Basin of the river Néris (Vilija). Before the war the Néris (Vilija), was chiefly used for raft transport and for navigation between Kovno (Kaunas) and Janova (40 kilometres), as well as between Vilna and Nementchina (32 kilometres).

Work had been undertaken with a view to regularising the channel especially by removing the rapids.

The vessels engaged in its navigation were of 20 to 40 h. p. and of 5 to 8 tons. They were used for carrying passengers as well as for agricultural produce and merchandise.

Except for its lower part, this district is at present occupied by the Polish troops, and is separated from the Niemen Basin, Kovno (Kaunas) district, by the military frontier line.

Navigation and raft transport in the district occupied by the Polish troops has entirely ceased.

2. The Grodno (Gardinas) District. The upper reaches of the Niemen from Alytus.

This district was navigated by barges each of 10 to 15 tons burden.

At the present moment this district, which is occupied by the Polish troops, is entirely cut off from Kovno (Kaunas) and Memel (Klaipėda).

The small ports are abandoned, many buildings have been destroyed, and navigation and raft-transport has been suppressed. Although, before the war, this district was the centre of the timber industry, the town of Grodno was, during the winter of 1920-1921, without wood for heating purposes, and the population which lived in this industry was unemployed.

3. The Kovno (Kaunas) District. The Niemen from Alytus to Smolininkai.

Before the war 19 boats were engaged in carrying passengers and merchandise. Their description was as follows :—

Power : 140 h. p.

Length : 40 metres.

Draught when laden : 0.80 m.

Cargo : up to 40 tons.

The greater number of these boats were used below Kovno (Kausas). All rafts went to Kovno (Kaunas) and thence on towards the Memel district. Of these 19 boats 8 were destroyed during the war and the others were carried off by the Germans as war booty.

After the evacuation of the German troops, the Lithuanian Government made every effort to reorganise navigation in these parts. In 1920, 10 Lithuanian boats were in use for the transport of passengers and merchandise. But as the tonnage of these boats was insufficient to cope with the passenger and goods traffic, they were re-inforced by boats from the Memel district.

The goods carried consisted of : wood, peat, grain, bricks, fodder, fruit, fish, oils, iron, manufactured articles, etc.

4. The District of Memel (Klaipėda), from Smolininkai to the mouth of the Niemen, before the war belonged to Germany. Since the Treaty of Versailles, this district (Lesser Lithuania or the territory of Memel) has been separated from Germany and temporarily placed under the sovereignty of the Allies.

This river waterway has not in any way suffered from the war ; its equipment and plant have remained unimpaired.

The tonnage of boats in use and carrying full cargo is at the present moment 14,000 tons :— in summer it is 5,000 tons. All these boats can go up from Memel to Kovno.

V. *Estimates*.—The Lithuanian river waterways are not yet in a condition to meet the requirements of navigation.

The development of river transport involves a whole series of improvements and will make it necessary to acquire new equipment at the earliest possible date. The following work and material is required :

Two dredgers (each 200 m³ to the hour) on the Niemen between Kovno and Smolininkai.

Two dredgers between Grodno and Kovno (each 100 m³ to the hour).

One dredger (50³ to the hour) on the Nérís.

Three excavating machines (each 75 m³ to the hour), between Kovno and Grodno in the pebbly part of the river-bed.

Ten floating cranes, each of 10 tons, and some small floating cranes.

2 service boats each of 150 h. p.

2 service boats, each of 60 h. p.

2 service boats, each of 60 h. p.

8 motor barges of 20 to 50 h. p.

The fitting up of the repair shops at Kovno, Vilna and Grodno.

The construction of new ports on the Niemen and on the Nérís.

Boats and barges for passenger and goods traffic.

B. PORTS.

All river transport converges on the port of Memel (Klaipéda), the natural port of Lithuania, which gives her access to the Baltic through the Kurisches-Haff. This port is sufficiently equipped for the present trade. Its length is 10 kilometres. Breadth : 300 to 400 metres. Minimum depth 6 metres. It rarely freezes.

In 1911 traffic was as follows :—

Entered the Port : 880 steamers with 309,000 tons of goods.

Left the Port : 878 steamers with almost equal tonnage of exported goods.

The principal export products of Lithuania which are sent to Memel (Klaipéda) are corn, linseed, flax, and, above all, wood (75% of the total exports).

The separation of the Memel territory from Germany and its restoration to Lithuania, its mother-land, will contribute to the great development of this port, more especially when the railways from Sauliai to Memel and from Kovno to Memel have been constructed. The port of Memel will become the centre of Lithuania's foreign trade.

The productive powers of Lithuania are at the present moment diminished by the Customs barrier which separates Memel (under the temporary administration of the Allies) from its mother-land, thus depriving the latter of her natural maritime outlet towards Western Europe. This forces Lithuania at the present time to use the foreign ports of Libau and Koenigsberg for her imports and exports.

In 1920 a Lithuanian-American Company was formed, which acquired 6 steamers of 400 tons each, intended for trade between Lithuania and the European States. This company will employ two ships in a trans-Atlantic goods and passenger service between the United States and Lithuania. The head office of this society is at Memel.

SUMMARY.

The Lithuanian Government has made great efforts, under numerous difficulties, to reorganise the railways and waterways; the state of traffic is rapidly improving, although the Government has received no outside assistance.

The chief difficulties are as follows :—

1. The aggression of Poland, whose regular or rebel troops occupy part of Lithuanian territory. The Lithuanian Government, wishing to settle this question peaceably, has submitted the matter to the League of Nations.

2. The artificial barrier (the customs frontier) which separates Lithuania from the territory of Memel, which, in accordance with the Treaty of Versailles, is under the temporary administration of the Allies.

3. The question of coal.

4. Lack of funds necessary to complete rolling-stock, and especially for purchasing goods trucks, fitting out repair shops, rebuilding stations and bridges destroyed during the war, acquiring dredgers, cranes and boats urgently needed for the improvement of the river waterways, etc.

LUXEMBURG.

Geographical Situation of Luxemburg.—Luxemburg is situated between France, Belgium and the Rhine Province. The chief tributary of the Rhine, the Moselle (which is not canalized), forms its eastern frontier. Luxemburg is by its very nature a transit-country, forming by reason of its situation, the natural link between Eastern France, Belgium, and the regions of the Moselle and Saar, as well as between Belgium and Alsace-Lorraine.

German coal, destined for Eastern France and Alsace-Lorraine, is sent across Luxemburg, and the same is the case in regard to French minerals destined for the Rhine countries. It is through Luxemburg that Alsace and Lorraine and their important industries have communication with Antwerp.

Finally, the great international route England-Belgium-Switzerland-Italy, through Bâle, crosses its territory.

Economic Situation.—Luxemburg is not, however, solely a transit country ; it is essentially an exporting country, owing to its important iron industry, which, at the time when the country still belonged to the German Customs Union, was responsible for one-seventh of Germany's total iron production. As the markets of the latter country will be closed or almost closed to it in the future, Luxemburg's industry, which depends on foreign countries for its fuel, must henceforward concentrate its activities on exporting to the great world markets ; and to compete in this field Luxemburg must have an outlet to the sea. Luxemburg lacks navigable waterways, but it has an excellent railway system planned.

The railways are divided into two systems of approximately the same length : the Guillaume-Luxemburg system, operated at present by the " Administration française des chemins de fer d'Alsace et de Lorraine " at Strasburg, and the Prince-Henri system, administered by the company of the same name at Luxemburg.

The position of these two systems is as follows :—

A. Guillaume-Luxemburg-Railway.

Plant.—The road-bed and the permanent way are in good condition. In two places temporary engineering works on the new Luxembourg-Oetrange line have still to be carried out.

Although after the war the number of damaged trucks was considerable, the amount of running repairs is now almost normal.

Traffic.—(a) train-kilometres :

1913 : 5,595,354 ; 1920 : 4,178,236.

(b) Passengers :

1913 : 8,146,275 ; 1920 : 5,571,251.

(c) Tonnage of goods traffic :

1913 : 8,135,473 ; 1920 : 4,255,950.

Rates.—In 1914 the passenger rates were as follows :

1st class	8 fr. 75	per 100 kilom.
2nd class	5 fr. 625	» 100 »
3rd class	3 fr. 75	» 100 »
4th class	2 fr. 5	» 100 »

and from March 24th, 1920 :

1st class	15 fr. 825	per 100 kilom.
2nd class	9 fr. 906	» 100 »
3rd class	6 fr. 38	» 100 »
4th class	4 fr. 25	» 100 »

These increases were not applied to season tickets or to the special tickets issued to workmen and school-children.

The pre-war rates for goods-traffic have been twice raised :

(1) from April 1, 1918, by 15 %.

(2) from March 24, 1920, by 125 %.

These increases applied to all transport by fast and slow trains (dogs, coffins, livestock, goods, etc.) but not to the transport rates for luggage.

Fuel.—The consumption of coal (Saar) amounts to 400 tons a day, or 146,000 tons a year ; as the price of one ton of coal is 100 fr., the annual expenditure is 14,600,000 fr.

Before the war, Saar coal cost 20 fr. a ton.

General Financial Situation.—The general financial situation is not favourable, owing to the small amount of traffic.

B. Prince-Henri Railway.

Plant.—Except that structural repairs have been somewhat delayed, the state of the lines, bridges and viaducts on this system is satisfactory. There is no rebuilding to be done, and no construction of new lines is contemplated.

Repairs to plant and, above all, to traction plant have been more seriously interfered with by the lack of war materials resulting from the war.

Traffic.—The circulation of the trains on this system was reckoned before the war at 2,011,012 train-kilometres. In 1919, the last period for which statistics are available, the figure had risen to 1,192,838.

In 1913, 9,206,814 tons of goods were carried ; and in 1919, 2,855,995 tons. The number of passengers carried was 2,620,420 in 1913 and 5,091,820 in 1919.

Rates.—Goods rates have been increased several times, and on February 1st, 1921, they reached a figure 300 % higher than previous rates ; special rates have, for the most part, been subject to the same increase as general rates.

Passenger rates show an increase of about 160 % as compared with pre-war rates ; reductions on return tickets have, however, been abolished. The price of workmen's season tickets has remained almost unaltered.

Fuel.—In 1913, the total consumption of coal was 38,593 tons, and of briquettes, 5,702 tons. In 1919, the consumption was reduced to 30,768 tons of coal and 1,115 tons of briquettes.

This fuel is at present supplied from Belgium, from the Ruhr and from the Saar Basin.

In 1913, the average cost of coal was 24.69 fr. a ton ; of briquettes, 27.65 fr. ; in 1919 the price of coal rose to 70.18 fr. a ton, and of briquettes to 86.25 fr. In 1920 the price of coal reached 194.07 fr. per ton.

General Financial Situation.—The railways are being run at a loss, owing, on the one hand, to the high cost of labour, fuel, and all necessary materials, and, on the other hand, to the small amount of transport.

THE NETHERLANDS.

I.

RAILWAYS.

1. Historical Review.

The first effort towards the construction of railways in the Netherlands dates from about 1830, and had, as far as the Northern Netherlands were concerned, relation to a project for a line from Amsterdam to the German frontier via Amersfoort-Isselburg. This plan failed for lack of capital. It was feared that our soft soil would be too great a drawback for the construction of the road and that the dense net of competing waterways would render economic exploitation of railways in our country impossible. A proposal brought forward by the Government to construct a railway line from Amsterdam to the border via Arnhem, with a side branch to Rotterdam, was rejected by the Chambers.

However, some enterprising men from Amsterdam applied for a concession to construct a railway between Amsterdam and Rotterdam. The Government granted this concession, with the result that on September 20th, 1839, the first part from Amsterdam to Haarlem was opened. This line was worked by the "Hollandsche IJzeren Spoorweg Maatschappij", briefly called H. S. M. On August 25th, 1839, the whole line was ready.

In the meantime, thanks to the initiative of the King, the question of the Rhine railway was brought forward again. By Royal Decree of April 30th, 1838, it was resolved that a railway from Amsterdam to Arnhem via Utrecht should be constructed. The payment of the interest on the loan issued for that purpose was guaranteed by the King from his personal funds. When the loan — provisionally 9 million guilders — had been redeemed, the ownership of the railway was to be transferred to the Government. The loan was placed, and as early as December 18th, 1843, the first part of the Rhine railway, the line Amsterdam-Utrecht was opened. On May 20th, 1845, the railway, which in the beginning was worked at great loss, was transferred to a combine of British capitalists, by whom the

"Nederlandsche Rijnspoorwegmaatschappij", briefly called N.R.S., was founded.

Till 1860 the "Hollandsche IJzeren Spoorweg Maatschappij" were able to carry out their operations (each with a territory of their own in the centre of the country) without being menaced by competition. The other railways which were built in this period, viz, the lines Moerdijk-Roosendaal-Belgian frontier, Roosendaal-Breda (Antwerp-Rotterdam Railway Company) and Maastricht-Belgian boundary, direction Hasselt (Aix-la-Chapelle-Maastricht Railway Co.), could, on account of their isolation, do no harm to the domination of the two great companies.

The position was altered in 1860, when the States-General passed a bill by which the construction of lines for the account of the State was decided upon. This step, which had been preceded by various useless attempts to arrive at railway construction by means of concessions, completely changed the aspect of the Netherlands railway map. There had not been a net so far; the construction had taken place by pieces, without regard to the requirements of the several parts of the country. The only decisive consideration had been where profit could immediately be made and not what region of the country could be better developed. In contradistinction, the act of 1863 held out a prospect for the construction of a connected complex of railways, so that the provinces could communicate with each other and with the centre of the country, and all parts of the Realm could equally profit by the advantages of a better connection.

By virtue of that act the following lines were built: Arnhem-Meppel-Groningen, Meppel-Leeuwarden, Harlingen-Nieuweschans, Zutphen-Enschede-frontier, Maastricht-Venlo, Breda-Venlo-frontier, Rotterdam-Breda, Amsterdam-Helder, Utrecht-Den Bosch. By the acts of May 21st, 1873, and November 10th, 1875, the lines Arnhem-Nijmegen, Zwaluwe-Zevenbergen, Zwaluwe-Den Bosch, Zwolle-Almelo, Dordrecht-Elst, Amersfoort-Kesteren, Zaandam-Enkhuizen, Stavoren-Leeuwarden, Nijmegen-Venlo, Rotterdam, Hook of Holland were added. These State lines, with the exception of the railways Zaandam-Helder, Rotterdam-Hook of Holland and Amersfoort-Kesteren, which were allotted to the H.S.M., and the line Venlo-frontier, which was worked by the Bergisch-Maerkische Railway Company, were operated by the "Company for the Exploitation of State Railways", founded in 1863 and briefly called S.S.

On October 5th, 1863, this company opened its first line, the section Breda-Tilburg, to public traffic, whereupon in the North the line Harlingen-Leeuwarden followed in the same year.

As the net of the S.S. expanded, its power increased in proportion and competition began among the three great railway companies. As the energy developed by the companies did not in the first place tend to promote traffic, but rather was applied to injure each other's interests, such a decline of the financial standing of the three concerns ensued that the Government deemed it necessary to take the matter in hand. Several solutions were suggested. The commission of enquiry instituted in 1881, which had to report about the question how the requirements of the public might best be met, had advised to modify the conditions of exploitation.

while retaining the three companies; from other sides partly State exploitation was advocated and partly a system of operation not by three undertakings but by one.

None of these solutions was chosen by the Government. Its purpose—a division of the net among two or more concerns which would be a match for each other and could compete under equal circumstances—was only to be reached by creating a state of equilibrium between two companies; neither the lines of the S.S. nor those of the H.S.M. could be made profitable unless the central complex could be disposed of: the Rhine railway. When this appeared to be for sale, the Government were able to carry out their scheme and the railway agreements of 1890 were laid down.

The position could now be resumed as follows:

2. Division of the trunk lines between S.S. and H.S.M., while the Rhine Railway Company was wound up.

2. Exploitation of these lines by S.S. and H.S.M. on the same conditions, when possible, on the basis of competition and of concentration with joint operation of lines, stations, warehouses, etc.

The Rhine railway net was given to S.S. for exploitation, while H.S.M. got the lines Stavoren-Leeuwarden, Dordrecht-Elst and Vork-Ressen Bommel, so far worked by S.S., and was charged with the exploitation of the line Amersfoort-Kesteren and the railway Schiedam-Hook of Holland. On a large scale the principle was now applied that one line should be used by two companies. Amsterdam, Rotterdam and a great many other towns in the West were thus given in each direction at least two direct communications with Germany and Belgium. For inland traffic at the more important centres of the country, people could generally choose between the S.S. and the H.S.M. route.

The danger that the companies would try to divert the business to their own lines along a round-about way, was in this way averted. Competition could now be pushed in the right direction and would not necessarily lead to exhaustion of the companies to the detriment of trade.

While it was intended by means of this concentration and competitive system to obviate the inequality which had existed between S.S. and H.S.M., it was necessary to place them on an equal footing financially also.

The regulation adopted in 1890 and still holding good, is chiefly as follows:

The State continues to be the owner of the State railways, but allows them to be used by S.S. and H.S.M. at a fixed annual rent, equal to the amount of the dividends received by the State in 1888 for the use of the State railways, in the form of 20 per cent. of the gross receipts of the S.S. and rent of the H.S.M., which amount was increased by the interest on the capital raised by the State to purchase the N.R.S. lines. (For S.S. the rent was fixed at f 3,400,000.—, for H.S.M. at f 550,000.—, which amount was diminished by f 65,000.— after the transfer of the Enkhuizen-Stavoren ferry.)

For the use of the new State lines, which will be given to the companies for exploitation, the latter pay the State an amount of 1,000 guilders per kilometre, or so much more as shall be agreed between the Minister of Public Works and the company concerned. The companies are obliged to keep the lines and all that belongs to them in good repair and to cede them to the State in a satisfactory condition in case of appropriation, cancellation, etc.

If the company deems it necessary to alter, improve or extend existing works or to build new works, the consent of the Minister is required. If the consent is granted, these works are constructed by the company for its own account and are deemed to form part of the State railways.

If the Minister does not grant the consent, or in case he deems works necessary while the company does not share this opinion, the question whether the works are necessary for carrying on the service according to the plans and estimates submitted, shall be referred to the award of arbitrators.

The cost of procuring rolling-stock is for account of the company.

Of the annual profit the companies retain an amount equal to 4 per cent. of their capital (for S.S. limited to 18,000,000, for H.S.M. to 22,500,000 guilders). Of the profit realised above these amounts, the State receives half till the whole share of the company amounts to 6 $\frac{1}{2}$ per cent. of its capital; of the rest four-fifths are paid to the State and pre-fifth to the company.

If the profit of S.S. amounts to not more than 3 $\frac{1}{2}$ per cent. of its capital for two consecutive years, it has a right to terminate the contract. H.S.M. has the same right when the sum of profits, depreciations and reserved profit amounts to less than 6 per cent. of its share capital.

At any time the companies' rights and titles can be expropriated at a year's notice or less. Moreover, by a judgment of the proper court, the right to exploitation can be withdrawn from the companies if they fail in keeping up the State railways, or if they do not live up to the stipulations of the agreement as regards exploitation, material and service.

Though extensions of the State railway net after 1890 took place sporadically (the most important extension was the construction of the railway Weert-Eindhoven under the act of January 2nd, 1905) new lines could repeatedly be added thanks to private initiative, part of which lines were worked by S.S. and part by H.S.M. Various companies for the construction of light railways were formed so that the trunk railways could be fed and out-of-the-way parts of the country could be freed from their isolation.

The system of State exploitation or nationalisation of the railways, though repeatedly discussed and propagated in the press and in pamphlets, has not been able to obtain a majority in Parliament so far. In 1918 a bill to this purport was rejected in the Second Chamber by 46 against 39 votes.

The Commission, *ad hoc*, recommended a single administration. In 1916 this system was practically, though not formally, adopted by amalgamation of S.S. and H.S.M. with the consent of the Government. This amalgamation also included the only two large private companies still

leading an independent existence, the N.C.S. (Nederlandsche Centraal Spoorweg Mij.) and N.B.D.S. (Noord Brabant Duitches Spoorweg Mij) so that now all trunk (and local) railways in the Netherlands — with the exception of those in Zeeuwsch Vlaanderen — are in the hands of the S.S. and H.S.M., combined under the name of "Nederlandsche Spoorwegen". In consequence of the arrangement made, the two companies continue to lead a separate life as to their agreements with third parties. Towards the Government their position is the same, while the boards of directors and the management are united in the same persons. There is a community of assets and liabilities, not of capital; the profit is equally divided in proportion to the capitals of the companies.

It is to be anticipated that this community of interests will contribute to a more efficient and economical management.

2. Legislation.

In the beginning the railways were considered to be like other public roads and it was not deemed necessary to make special legal provisions. Concessions were granted by the Crown by virtue of the Superintendence of the roads conferred on the King by the Constitution, while as regards the service the regulations laid down by Royal Decree of 1829 for public means of transport in this country, held good.

These regulations, however, were practically useless for railway service; the great speed of the new means of conveyance was a source of danger which rendered it imperative on the part of authority to make high demands on road, material and staff and to call into existence special penal sanctions.

Besides, the dangers attendant upon a monopoly had to be safeguarded against, for this is what the railway working in practice comes to. A sharp control on the part of Government was consequently necessary to see that the road and plant came up to certain technical requirements; on the other side the responsibility of railway companies with regard to the time table, the rates, the through transport, the military and mail-transport had to be fixed.

The first Railway Act of August 21st, 1859, contained the general rules which the Government thought fit to lay down; following the French legislation, it started from the principle that the law could not provide for all details and that the care thereof should be left to the Executive; this has the advantage that the development of traffic is not impeded by the long formalities attendant upon the enactment of a law.

The act of 1859 has later been replaced by the act of April 9th, 1875, still holding good but for various alterations.

Under this act a number of Royal Decrees were issued.

The most important regulations proclaimed by Royal Decree are the "Algemeen reglement voor den dienst" (general service regulations) and the "Algemeen reglement voor het vervoer" (general rules for transport); the former gives instructions to be observed by drivers, officials

Summary of Railway Returns.

(Supplied by the Ministry of Public Works.)

a) The lines, buildings and works are in good condition.

On account of the war it has been impossible to continue strengthening the road beds, but the administration is quickly catching up in this respect.

As to the construction of new lines, the preliminary work which had been postponed has now been taken firmly in hand.

The rolling stock consisted of the following :

	1913	1920
Engines	1,326	1,460
Rolling stock for passenger trains	4,508	4,992
Rolling stock for goods trains	25,543	32,090

The condition of the stock is the same as before the war.

b) Kilometres travelled by :

	1913	1920
Goods trains	17,304,000	14,838,000
Passenger trains	34,104,000	22,218,000

Merchandise carried :

	1913	1919
	19,811,869 tons	13,616,577 tons

The figures for 1920 have not yet been compiled.

c) Fares for passengers, luggage and merchandise are about 100 % higher than before the war, and several special tariffs have been temporarily or definitively abolished.

d) Total amount of fuel consumed in

	1913	1920
	741,000 tons	886,600 tons

Fuel prices have fluctuated considerably. Just now they are 3 ½ times as high as in 1913.

e) In 1913 a dividend of 5 % was paid.

For 1920 the receipts exactly cover the expenses.

Comparative Results

Year	Passenger traffic						Goods traffic	
	Number of persons conveyed					Passengers Km. covered	Goods carried (tons)	Train- Km.
	I class	II class	III class	At reduced fares	Total			
	In thousands								In thousands
1912	3.393	20.044	56.990	1.373	81.800	2.146.883	19.076	1.695.406
1913	3.692	22.477	60.853	1.544	88.561	2.340.003	19.578	1.748.643
1914	2.534	17.915	45.315	2.370	68.143	1.730.935	17.084	1.601.369
1915	2.576	18.806	54.915	16.447	92.444	2.409.099	15.667	1.678.185
1916	3.230	23.212	66.899	18.822	112.163	2.788.577	16.276	1.706.645
1917	3.164	23.375	86.482	10.695	123.716	1	13.566 ²	1
1918	3.324	24.030	88.977	9.474	125.805	1	13.147 ²	1
1919	3.697	24.670	93.816	4.471	126.654	1	13.876 ²	1

¹ Not available.² In connection with the amalgamation, figures from 1917 have been recorded as relating to one company only; in 1916 and preceding years, they were calculated separately for each company; this accounts for the lower figures for 1917 and the following years.

of Railway Traffic.

Receipts in guilders								Expen- diture in guilders	Working coefficient
Passenger traffic					Goods traffic		Total receipts		
I class	II class	III class	Total inclu- ding passen- gers conve- yed at redu- ced fare	Perpassenger per Km.	Total	Per ton per Km.			
In thousands									
3.509	11.450	17.886	33.637	0.016	35.589	0.021	76.000	52.773	69,44
3.760	12.451	19.346	36.477	0.016	36.855	0.021	80.447	56.377	70,08
2.645	9.032	15.273	31.893	0.018	33.912	0.021	73.314	50.875	69,39
2.506	9.011	16.746	40.673	0.017	37.012	0.022	84.934	54.917	64,66
3.092	11.107	19.605	49.255	0.018	41.778	0.024	96.244	65.313	67,86
4.789	15.223	24.065	52.806	—	46.012	—	102.726	78.078	76,01
6.420	18.036	28.447	60.680	—	61.829	—	127.065	104.808	82,48
9.006	24.976	34.358	71.473	—	78.473	—	156.425	144.366	92,29

LENGTH IN METRES, ON DECEMBER 31st OF EACH YEAR MENTIONED BELOW, OF THE RAILWAYS WORKED
BY THE COMPANIES MENTIONED HEREAFTER, BUT NOT BELONGING TO THEM, AND JOINTLY USED.

(Taken from returns issued by the Department of Public Works.)

Name of Company	1839	1845	1850	1855	1860	1865	1870	1875	1880	1885	1890	1900
Maatschappij tot Exploitatie van Staatspoorwegen . . .	—	—	—	—	—	272,959	791,952	848,769	932,617	1,287,549	1,431,621	1,558,361
Hollandsche IJzeren Spoorweg Maatschappij . . .	16,867	61,066	84,408	84,408	84,408	126,331	173,309	236,399	351,735	539,002	882,836	989,569
Nederlandsche Rijn-Spoorweg Maatschappij . . .	—	92,000	82,000	143,877	163,467	163,467	196,467	196,476	228,433	228,433	—	—
Nederlandsche Centraal-Spoorweg Maatschappij . . .	—	—	—	—	—	96,140	101,085	101,085	101,085	101,085	101,085	111,652
Noord-Brabantsch-Duitsche Spoorweg Maatschappij . . .	—	—	—	—	—	—	—	52,421	52,421	52,421	52,421	52,421
Spoorwegonderneming . . .	—	—	—	—	—	—	—	—	—	—	—	—
Grand Central Beige . . .	—	—	—	83,009	87,061	87,061	109,591	109,591	102,758	102,758	102,758	—
Luik Maastritsche Spoorweg Maatschappij . . .	—	—	—	—	—	11,022	11,022	11,022	11,022	11,022	11,022	—
Spoorwegonderneming . . .	—	—	—	—	—	—	—	23,350	23,350	23,350	23,350	23,586
Mechelen Terneuzen . . .	—	—	—	—	—	—	—	—	—	—	—	—
Spoorwegonderneming . . .	—	—	—	—	—	—	10,200	18,200	18,200	10,200	10,200	10,200
Ghent-Terneuzen . . .	—	—	—	—	—	—	2,966	2,966	2,966	2,966	2,966	2,966
Pruisische Spoorweg-directie Cologne ¹ . . .	—	—	—	—	—	—	2,966	2,966	2,966	2,966	2,966	2,966
Pruisische Spoorweg-directie Cologne ² . . .	—	—	—	—	—	18,965	21,983	21,983	22,738	22,738	8,116	8,116
Oldenburgsche Spoorweg . . .	—	—	—	—	—	—	—	—	857	875	875	875
Pruisische Spoorweg-directie Münster ³ . . .	—	—	—	—	—	—	—	5,371	5,371	5,371	5,371	—
Pruisische Spoorweg-directie Essen . . .	—	—	—	—	—	—	—	—	—	—	—	—
Haarlem-Zandvoort Spoorweg Maatschappij . . .	—	—	—	—	—	—	—	—	—	8,575	—	19,028
Bentheimer Kreisbahn . . .	—	—	—	—	—	—	—	—	—	—	—	—
Total	16,867	153,066	176,408	311,294	334,936	775,945	1,418,534	1,619,633	1,845,571	2,396,945	2,632,621	2,775,774

II.

WATERWAYS.

The main factors which have caused Hol and to become a prominent shipping country are its geographical position in the centre of North-Western Europe, and its wide estuaries, extending far into the hinterland and giving access to well-protected ports.

An increasing interest in shipping facilities manifests itself everywhere. The construction of new waterways and the improvement of the existing ones proves that our country is not lagging behind in this respect. Here, as well as in other fields of human activity, the technical progress of recent times is being keenly felt. On the one hand we see many a new method applied to the improvement of the waterways themselves ; on the other hand, there is a great change in the types of vessels that are used. Large steamers, powerful tugs, and fast motor-boats have come into prominence, as well as lighters of simple construction and considerable carrying capacity.

The conditions for a sound development of the shipping movement are the following : wide and deep waterways between the ports and the sea, modern port equipment, and good inland connections.

Amsterdam is reached by the North Sea Canal, which was opened to traffic in 1867 and completed in 1882, when it was placed under Government administration. Important improvements have since been effected. At Ymuiden, where the canal opens into the sea, a new large lock was constructed between the years 1887 and 1896. It has a length of 225 metres a width of 25 M. and a depth on the sill of 10 M. below the average water level. At the same time the outer port and the channel were deepened to 10 $\frac{1}{2}$ and 9 $\frac{1}{2}$ metres (respectively) below average sea level. The channel was widened so as to have a width of 50 metres at the bottom. One of the three revolving bridges spanning the canal was removed and the two others were given a passage 55 metres wide. Amsterdam is now easily accessible for ships measuring 200 \times 24 \times 9.20 metres. The locks are 2,400 metres away from the mouth of the harbour, and the distance from the locks to Amsterdam is 23,000 metres.

In 1913 (the last year before the war) 4,935 vessels, measuring together 9,337,874 gross register tons, passed through the Ymuiden lock.

Operations were recently started for the building of a new lock at Ymuiden, which is to measure 400 \times 50 \times 15 metres. This lock will be 1 $\frac{1}{2}$ times as wide as the locks of the Panama Canal, and will exceed the latter in depth by 3.30 metres. Their construction necessitates the widening of the North Sea Canal to 100 metres (at the bottom) and its deepening to 15 $\frac{1}{2}$ metres, as well as an enlargement of the outer port. Amsterdam will then have the widest and deepest ship canal in the world and will be accessible to ships of 100,000 tons.

Rotterdam is reached from the sea by the Nieuwe Waterweg (Rotterdam Waterway) which is an open river communicating with the sea through an artificial mouth at the Hook of Holland.

In 1863 it was decided that the Hook of Holland should be pierced for the construction of a canal without locks and that the existing river (the Nieuwe Maas) should be improved and canalized.

The necessary depth of 6 $\frac{1}{2}$ metres at low tide in the canal and of 7 $\frac{1}{2}$ metres at the entrance, was reached in 1863. The length of the "Waterweg" from Rotterdam to the North Sea is approximately 30,000 metres. The cutting of the Hook proved a complete success, but the increase in the size of ships soon necessitated a considerable widening of the canal in order to render a deepening of the channel possible. This was effected by the construction of dams and by means of dredging. In 1909 a channel had been obtained of 8 $\frac{1}{2}$ metres below low tide (10 metres below high tide) and in 1915 the works for the maintenance of this depth in a channel 100 M. wide had been completed. Including fishing boats, 22,645 vessels entered and left Hook of Holland in 1913 (with a gross capacity of 77,953,695 cubic metres, out of which 6,439 drew more than 5 $\frac{1}{2}$ M. and 25 had a draught of more than 9 M.

The increasing size of ocean-going vessels led to further improvements of the "Waterweg" not only as far as deepening of the channel was concerned but also in respect to the widening and rectification of the bends. After some time the "Waterweg" will be navigable for vessels drawing 12.20 M. for which a depth of 12.50 M. at high tide is required; and Rotterdam may be sure that in future its harbours will be able to accommodate vessels of the largest dimensions.

Next to these two world harbours, Holland possesses a number of smaller ports of local significance, as Delfzijl and Harlingen in the North, which are of much importance for the provinces of Groningen and Friesland. The harbour of Delfzijl, which at present is being improved, is accessible for ships drawing about 9 M., that of Harlingen for vessels with some 5 M. draught.

The port of Zaandam, important for the timber trade, is situated on the North Sea Canal and is adapted for the accommodation of the largest timber vessels in use.

Dordrecht can now be reached in normal circumstances by vessels of 6 $\frac{1}{2}$ M. draught, along the Goereesche Gat, Haringvliet, Hollandsch Diep and Dordtsche Kil. The intention is, however, to connect Dordrecht with the sea along the "Rotterdam Waterway", Noordgeul and Oude Maas; a depth of 7 $\frac{1}{2}$ M. in a fairway 100 M. wide, and a depth of 8 $\frac{1}{2}$ M. in a channel of 50 metres width will be provided there at high tide, so that Dordrecht will be rendered accessible for vessels of more than 8 M. draught.

Finally, in Zeeland we find the port of Flushing, deriving its importance from the passenger service Flushing-Queenborough, and also the harbour of Terneuzen, giving access to the Ghent-Terneuzen Canal. The largest of the locks at Terneuzen has a length of 140 M., a width of 18 M. and a depth on the sill of 8.35 M. below the level of the Canal.

We shall now proceed to give some details about the inland waterways and draw attention to the fact that for centuries past our large rivers have been the life arteries of our inland shipping and the great feeders of the fairway from the German boundary to Rotterdam along the Lower Rhine, Waal, Merwede, Noord and Nieuwe Maas.

In the middle of the 20th century, the rivers were already improved with a view to greater safety for the dikes. At the same time, however, our shipping profited by these ameliorations. Larger vessels were put in use, which in their turn made higher demands on the navigability of the rivers.

By virtue of the act of October 28th, 1889, an attempt was made to give the Waal River a depth of 2.70 M. (if possible 3 M.) below the average high water level (A.W.).

In 1895 the desired depth had been obtained but was not yet stationary, so that in times of low-water shipping was seriously impeded. As the construction of local works had proved to be without satisfactory result, a new and complete rectification of the Waal took place. The normal bed in summer was given a width of 250 M., beginning from the point where the Rhine divides into Waal and Pannerden Canal, and terminating at Fort St. Andries. From there the width gradually increased to 350 M. down to the lower part of the river, near Woudrichem. Thanks to this improvement a permanent depth of 3 M. (A.W.) has been obtained. The improvement, of the Boven-Merwede (Upper Merwede) brought the same result. The Noord is among the most crowded inland waterways. As the width of this river had become insufficient, it was widened to 200 M., with an additional widening of 20 M. in the sharpest bends; moreover, the river will be deepened to $3\frac{1}{2}$ M. below normal low-water level.

The Nieuwe Maas (New Meuse) has a depth of $6\frac{1}{2}$ M. and is in all respects fit for the largest inland navigation.

When shortly the widening of the Noord will be completed, the fairway from Rotterdam to Germany will at least have a width of 200 M. and a depth of 3 M. below normal low-water level. In connection herewith we wish to point out that the largest Rhine barge is 123 M. in length and 14.08 M. broad, and has a draught of 2.35 M. and a carrying capacity of 3,581 tons. Barges drawing more than 3 M. have not been built. In 1913 not less than 96,718 vessels passed the Rhine at the German frontier either up- or down-stream; with a total capacity of 52,354,137 cub. metres.

The Rhine trade to Amsterdam passes through the Merwede Canal, which was constructed in the years 1881-1893. It runs from Gorinchem to opposite Vreeswijk, crosses the Lek and continues to Amsterdam. The canal has a depth of 3 M.; and a width at the bottom of 20 M. the locks offer a passage of at least 12 M. and have a length of 120 M. The largest draught allowed in the canal is 2.80 M.; only with a special permit may this limit be exceeded. The largest ship which has gone through this canal had a capacity of 2,208 tons, and drew 2.94 M. The total Rhine traffic at Vreeswijk in 1913 amounted to 4,238 vessels, measuring 2,610,486 tons.

From the figures mentioned it appears that Amsterdam is no longer accessible for the largest Rhine barges; accordingly, on the part of the

Government, a proposal was made for the improvement of the canal so that it will be navigable for the largest Rhine vessels afloat.

In addition, a plan was mapped out for a Rhine shipping canal through the district known as the Geldersche Vallei.

The Merwede Canal does not only serve for Rhine shipping, but also to a large extent for home shipping, in particular for the Amsterdam-Rotterdam route via Vreeswijk.

Belgian Rhine navigation follows the Rotterdam route to Dordrecht, goes along the South Holland and Zeeland Streams, the South Beveland Canal, and the West Scheldt, and then takes the River Scheldt up to Antwerp. The South Beveland Canal is $6\frac{1}{2}$ M. deep, and the locks are 16 M. wide and 119 M. long.

A few more words should be said about the inland waterways which are used for home shipping and as a rule are navigable only for a smaller type of vessel than those discussed above.

Amsterdam is an important centre for this kind of trade. Several canals lead to the waterways in the province of South Holland, and one of them (from Amsterdam to Rotterdam via Gouda) is of marked importance owing to the absence of fixed bridges. North Holland, north of the Yssel is intersected by the Groot Noord Hollandsch Kanaal (North Holland Ship Canal), dug in the first half of last century so that sea-going vessels might reach Amsterdam. It can be used for fairly large vessels of up to 800 tons.

All kinds of river craft start from Amsterdam, and pass through the Oranje locks to the various harbours along the Zuyderzee or to the Yssel and thence through the Zwarte Water to the provinces of Overijsel and Drenthe. Passing through the locks at Lemmer, Stavoren or Harlingen, they reach the provinces of Friesland and Groningen. The largest of the Oranje locks has a length of 96 M., a passage of 18 M. and a depth of 4 M. below canal level.

When the Zuyderzee is drained, this inland sea will change into a lake, and shipping there will be exposed to fewer dangers and difficulties. It will no doubt be accessible to the largest vessels employed in inland navigation.

The city of Groningen, in the North of the country, is another important centre for inland navigation. Its chief communication with the Western part of the country is along the waterway to Lemmer, now navigable for vessels $31\frac{1}{2}$ M. long, 5.90 M. wide and drawing 1.80 M. Plans have been made to render this canal navigable for vessels 67 M. in length, 8.20 M. in breadth and drawing 2 M. Groningen is connected with the port of Delfzijl by the Eems Canal and with the peat-producing districts, which are gradually growing in importance by the Winschoterdiep and the Stadskanaal.

Another centre is Zwolle, the connecting point between the River Yssel and two shipping routes, one from Drenthe along the Zwarte Water and one from the peat districts along the Dedemsvaart. The Yssel is now being improved to a depth of about $2\frac{1}{2}$ M. below normal low-water level. The Overijsel Canal forms communication with Twenthe, but is entirely insufficient to serve this important industrial district. Therefore the digging

of a new canal has been decided upon. It is to have one branch from the Rhine to Almelo, and one to Enschedé and Oldenzaal as well as side branches to Borne and to the Yssel near Zutphen. The new Twenthe Canals will provisionally be constructed to accommodate vessels of 600 tons. Later on, however, they will be rendered large enough for ships of 2,000 tons.

The Meuse in Limburg being useless for any shipping of importance, the traffic by water takes place through the dammed-up Meuse, the Beersche Maas, and thence along the Meuse or the Zuid-Willemsvaart (South William Canal) which is connected with the Luik-Maastricht Canal, and through which 500-ton vessels can pass.

The system of waterways in these districts is, however, being greatly improved.

In the first place the Wilhelmina Canal is being dug, and is already partly in use. It runs from the Bergsche Maas, near Geertruidenberg, to the Zuid Willemsvaart, and has a side branch to Breda.

Secondly, the Meuse from Maastricht to Grave, where the river does not form any national or provincial boundary, is being canalized and connected with the inland shipping net by the Maas-Waal Canal.

Both the canalized Meuse and the Meuse-Waal Canal will be made navigable for vessels of 2,000 tons. The former will be connected with the Zuid Willems Vaart by the Wessem-Nederweert Canal, and in due course with the Wilhelmina Canal. To facilitate the shipping of Limburg coal, a canal has been projected for vessels of 2,000 tons from Maastricht to Born. Thus the canalized Meuse can be better reached from the Limburg coaling district.

Only the principal waterways have been described above; in our watery country there must needs be many more navigable canals, of a certain significance for local interests. Those who would like to obtain some more details about this subject can find them in the "Overzicht der Scheepvaartwegen in Nederland" (Review of the Waterways in the Netherlands) published by the Ministry for Public Works (Waterstaat).

Improvement of the North Sea Canal.

In 1907 a thorough improvement of the North Sea Canal was completed.

A lock had been built at Ymuiden measuring $225 \times 25 \times 9.20$ M. The depth here referred to was the depth at low water, which is 0.95 M. below Amsterdam water mark (A.W.M.).

In the canal the width of the bottom had been increased to 50 M., the depth to 10.30 M. below A.W.M. (depth of channel 9.80 M. at canal level), and the railroad-bridges had been replaced by more spacious ones.

In connection with the opening of the Panama Canal and with a number of works undertaken in ports which compete with Amsterdam, and also owing to a general increase in the size of ships, the question arose whether the North Sea Canal would in the long run meet the Dutch interests.

A Government committee, instituted in 1909 to report about the improvement of the Canal, pointed to the sound prosperity of the harbour

and to the great significance the canal has for Dutch trade, and deemed it strictly necessary that the question of the dimensions of vessels passing through the Suez Canal and Panama Canal be dealt with.

If, accordingly, the construction of a larger lock at Ymuiden was deemed to be of urgent importance, the bill enacted on the second of January 1917, made provision also for future widening of the Canal.

The execution of these works was subject to the condition that the parties interested, in this case the municipality of Amsterdam and the province of North-Holland, should together contribute a third of the cost of construction.

The dimensions of the lock were made to correspond with the largest depth in the North Sea that would be practically within reach of the harbour of Ymuiden in future.

A depth of 15 M. below A.W.M. (14 M. below low tide), a length of 400 M. and a width of 50 M. are contemplated, so that the future lock will exceed all others in the world in size, and as to the width, will even have 1.5 times the size of the locks in the Panama Canal.

The proportions of vessels passing through the North Sea Canal already come very near to the depth of the existing lock.

In this respect the s.s. "Jan Pieterszoon Coen" (154×18.5 M.), the s.s. "Gelria" (170×20 M.) and the s.s. "Limburgia" and "Brabantia", (each 188×22 M.) must be mentioned.

In order to obtain a straight channel a new canal will have to be dug almost parallel to the mouth of the existing one.

The intention is to give this new canal a depth of 12 M. under A.W.M. (11 M. under low water) in order to increase this depth later on, if need be, in accordance with the depth of the then-existing entrance from the sea to the outer harbour; the entrance canal at the land side will be made to correspond with the dimensions of the communicating part of the North Sea Canal. Between the Velzen railway bridge, where the new canal leading up to the new lock begins, and the municipal waters of Amsterdam (a distance of 18,000 M.), the North Sea Canal is to have a bottom-width of 100 M., a depth of 15.50 M. below A.W.M. (or 15 M. below the lowest canal level) and slopes of 3:1 in order that the largest vessels may be able to pass each other everywhere.

The curves are straightened, so that the smallest radius will amount to 3,000 metres South of the Canal. A strip of ground, 87 M. wide, will be earthed up to the height of the canal-dike, which strip may serve for the building of an ordinary road and the construction of a railroad.

The North Sea harbour at Ymuiden is considered to be sufficient for the wants of the near future. In case of an increase of the dimensions of the vessels passing the canal, this harbour will, however, also be enlarged. The South pier will then be lengthened and a new North pier built, so that both reach a depth of 14 M. below A. W. M. The existing North pier will then be altogether removed so as to increase the water area from about 100 to over 250 hectares (one hectare is 10,000 square metres).

Shipping Movement of The Netherlands.

(Data supplied by the Department of Agriculture, Industry and Trade.)

Seagoing vessels entered (Number and total net measurement in cubic metres.)

	loaded		in ballast		together	
1913	14.952	48.516.945	2.044	2.982.782	16.996	51.499.727
1919	5.647	17.006.956	1.435	3.679.581	7.082	20.086.537
1920	5.101	16.460.453	1.429	2.769.864	6.530	19.230.317

Seagoing vessels cleared (Number and total net measurement in cubic metres.)

	loaded		in ballast		together	
1913	11.878	31.188.856	5.211	19.826.703	17.089	51.015.509
1919	4.408	10.367.071	3.062	10.151.336	7.470	20.518.407
1920	4.768	12.984.231	1.936	7.508.609	6.740	19.487.840

River craft entered (Number and carrying capacity in tons of 1,000 kilog.)

	loaded		empty	
1913	56.586	29.007.257	34.807	9.859.792
1919	21.402	11.054.773	16.020	4.518.424
1920 (9 months) . .	16.862	10.522.934	10.959	2.138.582

	rafts		together	
1913	48	67.205	91.441	38.934.254
1919	126	172.781	37.548	15.745.978
1920 (9 months) . .	—	—	27.821	12.661.516

(weight)

River craft cleared (Number and carrying capacity in tons of 1,000 kgs.)

	loaded		empty	
1913	58.851	34.218.719	29.251	4.210.387
1919	16.234	8.895.435	20.997	6.353.202
1920 (9 months) . .	14.453	9.028.409	13.033	3.536.508

	rafts		together
1913	54	9.477	88.156 38.438.583
1919	—	—	37.231 15.248.637
1920 (9 months)	—	—	27.486 12.564.117
		(weight)	

Note.—Before the war there was a characteristic distinction between the overseas trade and the inland trade ; in respect to the former the quantity of cargo entered always exceeded the quantity cleared, whereas the contrary was the case as far as the inland trade was concerned.

Conditions in oversea traffic, which are in the main dependent on the Rotterdam trade of bulky goods, have not changed, but a total change has occurred in the traffic inland, so that now in both oversea and inland trade quantities entered exceed quantities cleared.

Shipping on Rivers and Canals across the Borders of Contiguous Countries.

(a) *German Trade.*

Via the Ems and Dollart (past Delfzijl)

		Number of vessels	Total carrying capacity in tons
entries	1913	2.224	433.955
	1919	1.042	233.788
	1920 (9 months)	1.174	103.093
clearances	1913	2.212	576.000
	1919	1.042	233.788
	1920 (9 months)	895	138.373

Via the Rhine (past Lobith)

entries	1913	48.699	26.373.576
	1919	10.323	6.615.597
	1920 (9 months)	12.051	7.146.744
clearances	1913	39.797	23.476.167
	1919	10.104	6.255.996
	1920 (9 months)	11.700	7.014.885

(b) *Belgian Trade.*

Via the South William Canal (Zuid Willems-Vaart) (past St. Pieter)

		Number of vessels	Total carrying capacity in tons
entries	1913	7.094	1.947.381
	1919	5.686	1.585.148
	1920 (9 months)	3.375	934.603
clearances	1913	7.750	3.134.132
	1919	5.182	1.429.399
	1920 (9 months)	2.809	947.791

Via the Scheldt (past Hansweert)

entries	1913	17.222	6.253.360
	1919	9.000	3.818.201
	1920 (9 months)	9.638	3.178.895
clearances	1913	16.665	6.074.134
	1919	8.997	3.801.580
	1920 (9 months)	9.664	3.121.792

Via the Terneuzen Canal (past Sas van Gent)

entries	1913	7.210	2.119.532
	1919	1.996	856.971
	1920 (9 months)	1.948	1.293.169
clearances	1913	6.036	2.083.858
	1919	2.052	864.791
	1920 (9 months)	1.962	1.331.276

1919

1913

Flag	Steamer	Gross capacity in cubic metres	Sailing vessels	Gross capacity in cubic metres	Total 1919	Total gross capacity in cubic metres	Steamer	Gross capacity in cubic metres	Sailing vessels	Gross capacity in cubic metres	Total 1913	Total gross capacity in cubic metres
Dutch . . .	888	4,334,518	90	25,061	978	4,359,579	1,327	6,267,663	146	32,974	1,473	6,300,637
British . . .	141	750,960	—	—	141	750,960	599	3,401,777	2	564	610	3,402,344
German . . .	144	355,613	9	13,737	153	369,350	247	1,721,255	8	18,357	255	1,739,612
Norwegian . .	24	56,199	2	7,970	26	64,169	124	305,449	1	2,222	125	307,671
Swedish . . .	25	70,635	2	4,262	27	74,897	100	347,862	—	—	100	347,862
Danish . . .	2	16,255	—	—	2	16,255	29	132,855	1	380	30	133,235
Finnish . . .	1	3,022	1	4,372	2	7,394	—	—	—	—	—	—
Italian . . .	1	9,136	—	—	1	9,136	1	8,052	—	—	1	8,052
French . . .	1	918	—	—	1	918	1	7,098	—	—	1	7,098
Austrian . . .	—	—	—	—	—	—	4	34,848	—	—	7	34,848
Belgian . . .	1	10,137	—	—	1	10,137	7	21,696	—	—	4	21,696
Spanish . . .	5	17,258	—	—	5	17,258	—	—	—	—	—	—
American . . .	16	203,438	1	9,483	17	212,921	—	—	—	—	—	—
Japanese . . .	10	139,015	—	—	10	139,015	—	—	—	—	—	—
Greek	1	14,719	—	—	1	14,719	—	—	—	—	—	—
Portuguese . .	1	708	—	—	1	708	—	—	—	—	—	—
Total	1,261	5,982,531	105	64,885	1,366	6,047,416	2,439	12,248,555	158	54,500	2,597	12,303,055

Number of Vessels Cleared.

Destination.	In 1919		In 1913	
	Total	In ballast	Total	In ballast
Great Britain	496	179	1,178	352
Germany	128	85	422	27
Denmark	26	—	25	2
Norway	23	4	54	3
Sweden	50	11	53	2
Russia (Baltic)	8	3	66	24
Belgium	12	10	27	14
France	61	6	39	4
Spain and Portugal	71	15	51	—
Italy	5	1	45	—
Mediterranean	6	—	71	—
Greece, Turkey				
Levant, Danube and Egypt				
Africa	11	4	1	—
Dutch E. Indies	31	4	106	1
West Indies and Surinam	23	4	29	—
British India	1	1	1	1
Finland	3	2	—	—
North America and Canada	71	66	26	16
South America	38	14	51	2
Malta	1	—	—	—
Dutch harbours	298	263	333	316
Austria	—	—	1	—
Total number of vessels	1,363	672	2,579	764
Of which in ballast (per cent.).	—	49.3	—	2.95

Vessels which left Amsterdam in 1919,*according to description and nationality.*

Flag.	Steam-vessels number	Capacity in M ³ . gross	Sailing vessels number.	Capacity in M ³ . gross	Total 1919	Total capacity in M ³ . gross
Dutch	917	4,490,969	89	25,979	1,006	4,516,938
British	138	700,224	—	—	138	700,224
German	132	325,990	8	12,913	140	338,903
Norwegian	22	48,215	1	2,696	23	50,911
Swedish	24	64,801	2	4,262	26	69,063
Danish	4	17,081	—	—	4	17,081
Finnish	1	3,022	—	—	1	3,022
French	2	1,597	—	—	2	1,597
Italian	2	17,340	—	—	2	17,346
Spanish	3	10,978	—	—	3	10,987
Greek	2	15,918	—	—	2	15,918
Portuguese	1	708	—	—	1	708
American	5	66,963	—	—	5	66,963
Japanese	10	139,015	—	—	10	139,015
Total . . .	1,263	5,902,820	100	45,850	1,363	5,948,670

The Netherlands Mercantile Marine.

(Particulars supplied by the Department of Agriculture, Industry and Trade).

The following statement gives particulars about the number of sea-going ships of which the Mercantile Marine of the Netherlands consisted at the end of 1913 and at the end of 1920, and also about the total net measurement of these ships in cubic metres. (One register ton is equal to 2.83 cubic metres).

	1913		1920	
	Number	Measurement	Number	Measurement
Steamships	387	1,832,244	427	2,209,657
Motor-vessels			79	64,889
Tugs			64	1,636
Sailing-vessels	400	113,763	283	78,425

No statistics have been compiled yet in respect to the numerous craft plying the rivers, canals and other inland waters of the Netherlands. The Traffic Bureau of the Crisis Section of the Department of Agriculture, Industry and Trade state, however, that the following particulars relating to inland shipping should, according to expert opinion, not be very far from exact. These particulars refer to the position on October 1st, 1920

	Total carrying capacity in tons of 100 kilog.
7,776 sailing ships	698,935
9 sailing ships with auxiliary engine	983
240 freight steamers	24,929
1,209 freight motor boats	75,285
2,650 towed or trailed vessels	1,072,067
253 passenger boats	14,377
753 tugs	19,348
18 other vessels	339
<hr/> 12,908 vessels	<hr/> 1,906,263

Note the expression "towed or trailed vessels" refers to lighters and similar craft that have no power of motion but are taken in tow by tugboats or are trailed along the canals by means of ropes, pulled by horses on the bank ("trekschuiten").

Out of the above 12,908 vessels :

5,309	carried less than	100 tons
2,890	between 100 and	200 tons
772	» 200 »	300 tons
527	» 300 »	400 tons
398	» 400 »	500 tons
722	over	500 tons

Comparison of Passenger Traffic of Principal Ports before and after the War.

(Figures supplied by the municipal authorities concerned.)

Rotterdam (exclusive of Hook of Holland).

Per Rotterdam Lloyd.

	Arrived from Netherl. East Indies & way ports	Left for Netherl. East Indies & way ports
June 1914	410	416
July 1914	286	620
Nov. 1918	none	none
Jan. 1919	2	384
Febr. 1919	181	199
March 1919	192	
Year 1920	6,032	6,587

Per Batavier Line :

	London	London
1913	14,499	16,017
1914	13,366	19,825
1919	4,373	4,555
1920	2,671	3,500

Per Hull Line :

	Hull	Hull
July 1914	1,689	1,845
Nov. 1918	6	42
Jan. and Febr. 1921.	114	115

Per Holland America Line :

	New York & way ports	New York & way ports
July 1914	3,071	2,756
Nov. 1918	123	none
Jan. and Febr. 1921.	1,963	7,151

With other ships (estimated figures).

	Various ports
July 1914	150
Nov. 1918	40
Febr. 1921	100

Amsterdam.

	All ports	All ports
1919	A 5,925	A 5,529
	B 3,510	B 5,809
	————— 9,435	————— 11,338
1920	A 7,220	A 7,123
	B 4,942	B 10,257
	————— 12,162	————— 17,380

A = Netherlands subjects; B = others.

Flushing.

	Folkestone	Folkestone
July 1914	11,263	11,060
Nov. 1918	none	none
Jan. 1921	766	869

Passenger Fares.

(Compiled from information supplied by the companies).

The prices are Guilders (unless otherwise specified).

b) means: per berth

c) means: per cabin (generally a 1 to 3 berth outer cabin, occupied by one passenger, on one of the intermediate vessels).

Hollandsche Stoomboot Maatschappij.

Amsterdam-London	July 1914	9.—
	Nov. 1918	60.—
	March 1921	21.—
Amsterdam-Hull	July 1914	9.—
	Nov. 1918	60.—
	March 1921	36.—

Batavier Line.

	Cabin I	Cabin II
Rotterdam-London 1914	12.60	7.80
Jan. 1919	60.—	
Sept. 1920	30.—	20.—

Zeeland Line.

		Cabin I	Cabin II
Flushing-Folkestone	1914	£1.—.—c	£—.4/—b
	Nov. 1918	suspended	
	Oct. 1920	£1.10.—c	£—.4/—b
	Jan. 1921	£1.10.—c	£—.4/—b

Holland-America Line.

			Cabin III
R'dam-New York	Sept. 1920	—	431.25
	Nov. 1920	1,125 c	—
	Jan. 1921	—	350

Royal Holland Lloyd.

		cabin I	cabin II	middle cabin	tween-deck
Amsterdam to Buenos Aires.					
Jan. 1914	. . . . frcs.	1050.—b			
July 1918	. . . .	1965.—b	1179.—b		
Feb. 1919	. . . .	1020.—b	468.—b	360.—b	
Feb. 1921	. . . .	1680.—c	840.—b	600.—b	300.—

			cabin I	cabin II	middle cabin
La Coruna	Jan. 1914	frcs.	125.—		
	Feb. 1919		144.—b	72.—b	54.—b
	Feb. 1921		300.—b	180.—b	
Habana	Feb. 1921		960.—b	648.—b	
Vera Cruz	Feb. 1921		1056.—b	720.—b	
New York	July 1918		840.—b	504.—b	

Nederlands S. S. Co. & Rotterdam Lloyd.

Amsterdam-Rotterdam to:

Southampton	(April 1914)	30.—	18.—	
Lisbon	»	96.—	66.—	
Tanger	»	108.—	72.—	
Algiers	»	132.—	90.—	
Genoa	»	144.—	96.—	
Port Said	»	252.—	168.—	
	(1917)	300.—	200.—	120.—
Aden	(April 1914)	480.—	300.—	180.—
Colombo	»	600.—	400.—	240.—
	(1917)	700.—	450.—	300.—
Singapore	(April 1914)	790.—	510.—	300.—
	(1917)	930.—	580.—	350.—
	(Jan. 1921)	1,600.—	1,100.—	650.—

Batavia	(April 1914)	860.—	530.—	300.—
	(1917)	1,000.—	600.—	350.—
	(Jan. 1919)	1,500.—	600.—	600.—
	(May 1919)	1,200.—	800.—	500.—
	(Jan. 1921)	1,600.—	1,100.—	650.—

Batavia to San Francisco				
	(Nov. 1918)	820.—	430.—	

Royal West Indian Mail (January 1921).

Amsterdam to :

	Cabin I	Cabin II	Cabin III	Freight Steamer
Madeira	400.—	200.—		
Paramaribo	700.—	400.—	550.—	
Curaçao	700.—	400.—	550.—	
Puerto Colombia	900.—	500.—		
St. Thomas	750.—	425.—	550.—	
Port au Prince	800.—	450.—		
Guayaquil				900.—
Callao				1,000.—
Antofagasta				1,050.—
Valparaíso				1,100.—
Corral				1,250.—

Merchandise imported into, and exported from, the Netherlands.

*(Figures supplied by the Department of Agriculture,
Industry and Trade.)*

<i>Oversea Traffic.</i>		1913 (tons of 1,000 Kilograms)	1919 (tons of 1,000 Kilograms)
Imports		26,020,445	4,655,146
Exports		10,090,387	1,053,086
Transit (with transhipment)			3,268,687
Transit (without transhipment)			368,446
<i>Traffic by Land</i>		36,110,832	9,345,365
<i>Traffic on Rivers and Canals.</i>			
Imports		23,856,171	4,205,719
Exports		29,290,054	609,375
Transit (with transhipment)			2,723,631
Transit (without transhipment)			4,778,177

Note: The 1919 figures for the traffic on rivers and canals may also be grouped as follows :

	(tons of 1,000 Kilograms)
Belgian boundary, inward	4,497,697
outward	2,180,769
German boundary, inward	2,799,948
outward	2,838,478

Fuel for Shipping.

The quantity of coal consumed in 1920 for inland shipping purposes amounted to 195,040 tons ("bootjes" coal).

In the same year 486,000 tons of coal (mostly imported) were used for ocean navigation.

These figures refer to coaling of Netherland ships in Netherland waters.

Prices during the year were the following (Guilders per ton.—one guilder at par equals 1 s. 8 d.):

	"bootjes" coal	domestic coal	imported coal
Jan.	43.50	49.—	60.—
Febr.	43.50	55.—	60.—
March.	48.50	57.50	68.50
Apr.	57.35	57.50	68.50
May	57.—	57.50	68.50
June	63.30	64.75	75.—
July	63.30	64.75	75.—
Aug.	73.15	71.80	83.—
Sept.	71.70	71.80	83.—
Oct.	71.75	71.80	83.—
Nov.	71.75	71.80	83.—
Dec.	56.80	62.—	73.—

Traffic on the Principal Waterways in the Netherlands.

NAME OF PORT OR WATERWAY	POINT WHERE OBSERVATIONS WERE MADE	NUMBER OF VESSELS			TONNAGE (tons of 1,000 kilograms)			REMARKS
		In 1913	In 1920	% of increase in 1920	In 1913	In 1920	% of increase in 1920	
North Sea Canal	1 Ymuiden	Seagoing vessels 4.985	4.212	—	25.902	Seagoing vessels 2.633 ¹	19.260	25
	(compare 7)	River craft 15.621	30.544	95.5	1.523	River craft 550	525.333	—
Amsterdam trade	2 Hook of Holland	22.645	13.207	—	77.953	695	46.623	40
	3 Rotterdam	19.690	11.446	—	71.628	962	41.771	41.5
Dordrecht	4 Dordrecht	Seagoing vessels 50	127	154	154.164 ¹	Seagoing vessels 170.330 ¹	10.5	—
	harbour	River craft 4.443	6.143	38	4.222	River craft 839	781.974	85 ²
Delfzijl harbour	5 Delfzijl	Seagoing vessels 774	1.077	39	1.846	Seagoing vessels 923 ¹	801.691 ¹	56.5
	6 Harlingen	Seagoing vessels 940 ¹	376 ¹	—	2.329	248 ¹²	752.855 ¹²	67.5
harbour	7 Ymuiden	River craft 22.919	14.656	—	6.686	360	4.351	35
	(fishing port)	29.577	22.114	—	52.354	137	20.381	61
Rhine River	8 near German boundary (at Lobith)	96.762	33.383	—	3.363	238	2.010	40
	9 Arnhem	27.754	14.945	—	8.321	178	6.780	18
Lower River	10 Vreeswijk	52.131	35.937	—				5

Meuse River	12 Hedel 13 Andel	8.236 28.672	6.467 23.793	— —	21.5 17	1.755.804 3.987.085	894.839 3.655.129	— —	49 8.5
Lauwerzee-Harlingen canal	14 Kiesterszijl	17.291	8.941	—	48.5	1.201.700	788.749	—	34.5
Stroobos - Lemmer canal	15 Terhorne Locks 16 Lemmer Locks	20.851 12.711	18.205 12.954	— 2	12.5 —	1.527.555 1.344.234	1.383.900 1.245.015	— —	9.5 7.5
Drentsche Hoofdvaart canal	17 Norg Bridge	12.901	10.407	—	19.5	571.884	628.667	10	—
Eemskanaal (Groningen-Delfzijl) canal	18 Delfzijl Locks	7.909	4.694	—	40.5	960.992	608.323	—	36.5
Eemskanaal—Hoendiep connection	19 Groningen	24.986	27.567	10.5	—	1.651.164	1.879.298	14	—
Hoendiep (Groningen—Friesland canal)	20 Gaarkeuken Locks	29.402	27.659	—	6	1.730.089	1.645.503	—	5
Meppelderdiep (Meppel-Zwartsluis canal)	21 Zwartsluis	19.038	15.398	—	19	1.450.914	1.321.595	—	9
Willemsvaart (Ysel-Zwartewater canal)	22 Katerveer	21.115	18.711	—	11.5	1.595.626	1.602.150	0.5	—
Water connecting Waal and Meuse Rivers	23 St. Andries	7.550	3.208	—	57	1.498.457	447.392	—	70
Amsterdam—Zuiderzee	24 Oranjesluizen (Orange Locks at Schellingwoude)	59.064	47.357	—	19.5	1	1	—	1 no particulars about tonnage available

Traffic on the Principal Waterways in the Netherlands (continued).

NAME OR PORT OF WATERWAY	POINT WHERE OBSERVATIONS WERE MADE	NUMBER OF VESSELS			TONNAGE (tons of 1000 Kilograms)			REMARKS
		In 1913	In 1920	% of increase in 1920	In 1913	In 1920	% of increase in 1920	
Noordhollandsch kanaal North Holland canal	25 Nieuwediep	4.287	4.633	8	540.968	434.727	—	19.5
	26 Purmerend	18.019	12.095	—	1.120.227	833.266	—	25.5
	27 Willemsluizen (William Locks)	40.636	32.615	—	1.752.994	1.655.917	—	5.5
Merwede-kanaal (Amsterdam- Gorinchem canal)	28 Zeeburg (near Amster- dam)	69.152	59.884	—	10.998.897	10.388.954	—	5.5
	29 Utrecht	81.823	64.474	—	11.682.397	10.069.708	—	14
	30 Gorinchem	12.272	13.387	8.5	2.337.745	2.580.388	10.5	—
Keulsche vaart (Amsterdam— Utrecht-Vreeswijk canal)	31 Diemerbrug	23.083	23.224	0.5	844.446	1.195.796	41.5 ¹	—
								¹ increase caused by temporary sand traffic.
Amsterdam - Gouda - Rotterdam canal	32 Gouda	40.189	34.939	—	3 203.530	2.998.365	—	6.5
Voorne canal	33 Nieuwesluis	12.310	6.830	—	941.865	416.939	—	56
Kanaal door Zuid-Beveland (South Beveland canal)	34 Hansweert	Seagoing vessels 29	112	286	25.611	84.763	231	—
		River craft 152	137	—	16.896.735	10.669.008	—	37
Walcheren canal	35 Veere	Seagoing vessels 65.312	39.785	—	57.584 ¹	87.727 ¹	52.5	—
		River craft 11.373	2.263	—	1.579.549	933.739	—	41
		Seagoing vessels						

Terneuzen-Gent canal	37 Terneuzen	River craft 10.835 | 8.644	—	20	1.329.275	700.448	—	47.5
		Seagoing vessels 37.711 | 1.782	—	52.5	11.272.778 ¹	5.316.374 ¹	—	53
	38 Sas van Gent	River Craft 21.054 | 13.367	—	36.5	5.399.678	2.823.776	—	47.5
		Seagoing vessels 3.103 | 1.680	—	46	9.341.634 ¹	4.769.406 ¹	—	49
	39 Engelen & Crè- vecoeur	River craft 16.749 | 7.327	—	56	4.213.019	1.994.735	—	52.5
		29.457 | 22.382	—	24	4.818.081	3.719.074	—	23
	40 Lock No. 1 above 's-Herto- genbosch	17.198 | 13.812	—	19.5	4.073.229	3.116.878	—	23.5
	41 Lock No. 8 above Helmond	13.515 | 11.116	—	17.5	3.525.047	2.832.005	—	19.5
	42 Lock No. 16 near Weert	10.965 | 5.525	—	49.5	3.244.080	1.724.867	—	47
	43 Lock No. 19 near Maastricht	16.447 | 11.905	—	27.5	4.619.444	3.374.768	—	27
Maastricht-Liege canal	44 Lock No. 5 above Maas- tricht	13.613 | 8.848	—	35	4.048.622	2.587.895	—	36
	45 Geertruiden- berg	9.563 | 16.445	72	—	447.917	1.320.404	195 ²	—

¹) gross measure-
ment.

² increase caused
by completion
of new canals
connecting the
Dongue with the
River mark and
with the central
part of the pro-
vince of North
Brabant exten-
ding as far as
Tilburg.

III.

MOTOR AND AIR TRANSPORT.**Motor Transport.**

The first use made of motor trucks dates from 1898. In November of that year the Minister of Public Works issued the first permit for riding motorcars (trucks) on roads under Government administration, pursuant to the regulations concerning Government roads of January 19th, 1896 (Statute Book No. 25).

At first this kind of traffic did not develop to any extent, so that in the year 1914 there was yet no question of any considerable motor-trucking. Then came the mobilisation and the lack of gasoline (motor spirit), putting a stop to all motor traffic except for military purposes. Only after the conclusion of peace was a marked increase noticeable. The great advantages of trucks had become evident in the use made thereof by the military. Moreover, the high railway rates and the over-supply of motor-trucks in countries that had participated in the war, contributed to this increase.

Only seven out of the eleven provinces have compiled statistics relating to motor-trucks. These statistics are appended.

The use of trail-cars has likewise increased. The first permit to ride them on Government roads dates from October 18th, 1905.

Their introduction necessitated a revision of the legal provisions thereanent. These were revised in the second half of 1920. Since then, 119 permits have been issued.

Civil Aerial Traffic in the Netherlands.

(Data supplied by the Ministry for Public Works.)

After the conclusion of the armistice the necessity arose to pay more attention to aerial traffic.

One of the first consequences of this necessity was that the plan was conceived to hold the Eerste Luchtverkeer-Teutoonstelling (First Aerial Traffic Exhibition at Amsterdam), which was actually opened on August 1st, 1919, and was energetically supported by the Government as well as by the Municipality of Amsterdam. The object of this exhibition was to see that better notions as to what might and might not be expected with regard to air traffic should find acceptance in wider circles.

The following Governments and firms took part in the demonstrations on the "Elta" flying grounds:

1. The Netherlands Government ;
2. The French Government ;
3. The Italian Government ;
4. The Portuguese Government ;
5. The American Government ;
7. A. V. Roe and Co. Ltd., Manchester ;
8. H. & M. Farman, Moulineaux ;
10. Morane Saulnier, Paris ;
11. Soc. L. Bréguet, Villacoublay ;
12. The Aircraft Manufacturing Co., Ltd., London ;
13. The Blackburn, Co., Leeds ;
14. The Handley Page Co., Ltd., Cricklewood ;
15. Vickers Ltd., Sheffield ;
16. Soc. Ansaldo, Turin ;
17. Nederlandsche Automobielen- en Vliegtuigenfabriek "Trompenburg"
Ltd., Amsterdam ;
18. Nederlandsche Vliegtuigenfabriek "Fokker" Ltd., Amsterdam.

The number of aeroplanes sent in amounted to 51, 46 of which were used for flights.

Nearly every day Dutch flying machines of different types went up. Besides, the exhibition was visited by 13 foreign hydroplanes, of which 7 were English and 4 Italian ; almost daily Dutch naval aviators made flights from their aviation camps to the exhibition and used hydroplanes, one of which was built by "Van Berkel's Patent" at Rotterdam. Out of the 150 airmen, who came by air to the "Elta", or demonstrated there, 44 were Netherlands subjects.

The public were given an opportunity to make short flights above the grounds, of which opportunity during the exhibition (2 Aug. - 14 Sept.) 3,265 paying passengers availed themselves, while we may safely assume that about 3,000 more passengers ascended who had either been invited or contributed to some charitable purpose.

The smallest number of paying passengers carried on a single day was 1, the largest 219.

The fact that the number of insurance policies taken out at the passage office fell, according as the number of passengers increased, affords a proof of the important success achieved by the "Elta", namely a decrease of the excessive fear entertained by the public with regard to flying.

The "Elta" grounds were visited by 545,167 paying persons.

Participation in Aerial Traffic.

Seeing that Holland is too small for any expectations to be entertained of inland air traffic, at any rate for some time to come, she was from the beginning destined to take part in international traffic and to form the meeting point of the air lines from the various countries of Western Europe.

Government Action.

In November 1919 a State Commission for Aerial Navigation was instituted, whose task it was to advise the Government in all matters concerning aerial navigation ; already during the years of the war an experimental service was instituted as a sub-division of the Munitions Office.

When the Munitions Office was discontinued, the Governmental experimental service was transferred (in the early part of 1920) to the Ministry for Public Works, where now all affairs relating to civil aerial traffic are being treated.

Moreover, an advisory board was instituted by Royal Decree of 27 February 1920, No. 71, which Board had to advise the Minister.

The support granted on the part of the Government to civil aerial navigation had manifested itself in the first place in the fact that the military flying grounds Schiphol and Schellingwoude have been put at the disposal of private parties. These grounds will gradually, at the expense of the State, be provided with the equipment necessary for civil traffic, while on the air routes from these grounds to foreign countries suitable landing places are being provided.

A provisional arrangement was made to regularly exchange service and weather reports by means of wireless telegraphy, in the beginning only between the Netherlands and England, later on also between the Netherlands and Germany. The signal service with foreign countries and with the aviation ground Schiphol near Amsterdam was performed by the military wireless station at Soesterberg, while the Koninklijk Nederlandsch Meteorologisch Instituut, (Royal Dutch Meteorologic Institute) at De Bilt supplied meteorological data.

This improvised report service has contributed a good deal to the success of the trial services in 1920.

Moreover, an amount of 200,000.— guilders was appropriated on the budget for 1920, to be paid as a subsidy to K.L.M. (Koninklijke Luchtvaart-Maatsch., or Royal Aerial Navigation Co.) to partly compensate for the loss sustained by the company during 1920 and the probable loss in 1921;

Législation.—Legal provisions concerning air traffic do not yet exist in this country, but are being prepared, and will probably be ready in 1921 : not before then will it be possible for Holland to join the conventions for aerial navigation, or to make separate agreements with various States relating to air traffic.

Though there is no legal compulsion to submit to state control, the Government has declared itself willing, on specified conditions, provisionally to register the aeroplanes of the K.L.M. and to supply* them with certificates of air-worthiness.

The flying machines thus registered bear the marks prescribed by the Convention for Aerial Navigation.

The Royal Aerial Nav. Cy. for the Netherlands and Colonies was established on October. 7th, 1919.

Aerial Services in 1920.

On the 17th of May, 1920, a provisional every-other-day service to England was opened, changed on June 28th into a daily service, in co-operation with the Aircraft Transport and Travel Co. Ltd. On the 12th of July a twice-daily service to England was introduced.

A beginning was made with a regular mail service on July 5th ; seeing that the British Government had concluded a mail contract with the Handley Page Transport Co. Ltd., the K.L.M. also entered into an agreement with this company and partook of the daily mail transport between England and the Netherlands. Between Germany and the Netherlands an every-other-day service was opened on September 1st, 1920, in co-operation with the Deutsche Luftreederei ; this service was altered on September 15th into a daily one. Both services were stopped on November 1st.

Flights were made from Amsterdam to Hamburg via Bremen, corresponding with the lines Bremen-Berlin and Hamburg-Copenhagen.

On the above lines, viz., Amsterdam-England and Amsterdam-Germany, 584 machines were used in 1920, employed by the K.L.M. and conveying 345 passengers, 21,963 kilos of commodities and 2,962 kilos of mail.

Except a few forced landings, owing to mist or low clouds, causing only material damage, no accidents with aeroplanes have occurred on the lines of the K.L.M.

Plans for 1921.

For aerial services to be opened in 1921, the K.L.M. disposes of an air fleet, consisting of :

2 Fokker transport machines, already purchased in 1920 ; 2 Fokker C machines, reconstructed into transport machines provided with a B.M.W. motor and able to carry passengers ;

8 Fokker transport machines with Siddeley Puma motors and fit to convey 5 passengers ;

1 Airco "9" with Siddeley Puma motor with accommodation for 2 passengers ;

Of the said machines, 10 will be equipped with wireless telephone.

The intention is to open the following services with the above machines in co-operation with foreign companies, on April 1st, 1921 ;

1. A service to London, once or twice per day, and back.

2. A service to Brussels, twice daily and back ; once going as far as Paris.

3. A service to Hamburg, twice daily.

The aerial services start from Amsterdam, but, as far as those to Brussels and London are concerned, will touch at Rotterdam.

Aviation Grounds.

The following military aviation grounds have been opened to civil aviation.

A. for aeroplanes :

1. Schiphol.
2. Soesterberg (conditionally).
3. De Kooij (only for domestic traffic).

B. for hydroplanes :

1. Schellingwoude.
2. De Mok (on Texel Island) (conditionally).

The Rotterdam municipal grounds are also at the disposal of private aviation.

Aeroplane Industry.

During the war a successful effort was made to build aeroplanes in the Netherlands. It is, however, easy to understand that after the termination of hostilities, when this industry in the belligerent countries had to face a considerable decline and when much material was put on the market at very low prices, a great development of the Dutch aeroplane industry was out of the question.

In The Netherlands the following concerns are now engaged in constructing aeroplanes, especially on behalf of civil traffic.

1. The N. V. Nederlandsche Vliegtuigenfabriek "Fokker" at Amsterdam.
2. N. V. Maatschappij "Van Berkel's Patent", at Rotterdam.
3. Carley's Vliegtuigenfabriek at Ede.
4. Nederlandsche Automobielen- en Vliegtuigonderneming, at Cuijk.

Royal Air Navigation Co. for The Netherlands and the Netherlands Colonies.

The air services to England and Germany, which were suspended on November 1st, 1920, will be resumed in March or April 1921.

The winter of 1920-1921 was used to buy materials, to increase the staff, and to conduct negotiations with the post office and the custom-house, in order to ensure regular mail services for 1921.

Although great safety and regularity were attained, only a limited number of passengers and parcels were conveyed in 1920. Prices in 1921 will be lowered by 25 per cent.

The Dutch Indies.

I.

JAVA RAILWAYS.

The question of transport is one of the most important ones of Java and its history has been very interesting. The construction of roads is of the utmost importance, more so as there are practically no rivers or canals. Only the Solo River and the Brantas have in the early days been used for navigation, and the Tji-Manoek in Western Java was used for small river-boats. There are vast plains where canals could be constructed, but difficulties, caused by the heavy tropical rains, make such work costly and often useless. A small canal was made from Tandjong Priok about 10 km. long.

Of course the seas around the Island have always offered splendid transport opportunities, but only coastal towns could profit thereby, and as the island of Java is practically everywhere 100 km. wide, the inland towns and districts had to be provided with some other means for transport and traffic.

When Governor Daendels arrived in Java, transport by sea was practically impossible on account of the war with England. He therefore energetically started to work on what is called the Groote Postweg, and in a few years part of this road, from Anjer to Besoeki, was completed. This road was mainly intended for military purposes, and it was the intention to connect Bandoeng, which was to become the centre of defence, with Batavia and Anjer, Semarang, Sourabaya and Banjoewangi, a distance of about 1,000 kilometres, a colossal enterprise, which made in those times a tremendous impression. Eventually (1830) branch roads were constructed from this main road, which naturally assisted in the early development of the interior of Java. Yet these roads were not sufficient for the traffic which was increasing on all sides, and the Netherlands Trading Society often complained that the produce could not be transported to the coast. The cost remained exceedingly high.

The passenger traffic was fairly quick but very expensive. Private firms asked from 33 to 67 cents per kilometre, and the Government wanted from 83 to 133 cents for the same distance; the price for the transporta-

tion of goods was not much better. For a picul of coffee, for instance, from Kedoe to Semarang about f 1.50 was paid in 1835 ; and five years later, when production was considerably increasing, even f 3.30 was asked. In those days the goods were either carried by coolies, packhorses or loaded in oxcwagons. Later, mules were imported as well as camels, but both proved failures.

In 1842 railways were first mentioned in Java but only the rails were meant and the trucks were to be drawn by oxen or buffaloes. But even that did not eventuate. Eighteen years later the first engineer was sent from Holland to survey a railway line from Semarang to the Vorstenlanden (Native Sultanates of Soerakarta or Solo and Djogjakarta or Jocja). This was the first real beginning of railways in Java.

The results of the engineers' survey were not unfavourable, but for the enterprise money was wanted and that seemed almost unobtainable. Neither the Government nor the Trading Society were anxious to finance the railways, partly because they feared that the native population would not take to this modern way of conveyance. Finally a new company with French capital, the "General Company of Commerce and Industry", was established. This concern procured a concession to build the Netherlands Indian Railway, Semarang-Vorstenlanden, with a branch to Fort Willem I, for a period of 99 years. The Government guaranteed 4.5 % for the first 38 years. In 1864 the Company was also granted a concession for the line Batavia-Buitenzorg.

Great difficulties had to be overcome, such as landslides and the hot and damp climate to which the Dutch engineers were not accustomed.

The beginning of railway construction was not a success. Only in 1867 a small part of the Semarang line was completed.

The General Company of Commerce and Industry went bankrupt, and in 1869 the work had to be stopped till the Government decided to give financial assistance.

In 1870 the first railway service was opened from Semarang to Solo; a triumph for the Company, and a wonderful spectacle for the indigenous population of that centre of old-Javanese life, Soerakarta. But further disappointments cropped up ; an intended debenture loan failed and again the Government had to come to the assistance of the Company. In 1873 the railway was completed to Djocja and at the same time the line Batavia-Buitenzorg was completed ; the construction of the latter had taken nine years, although the distance was only 56 km. After it had been proved that the natives were not averse to the new invention, the Government took the railway question seriously in hand.

In 1875 a bill was passed to construct several small railway lines, mainly in order to connect the hinterland with Batavia and Sourabaya. This was the commencement of the growth of this latter place, whilst the connection of Batavia meant the construction of a large tunnel.

The bill passed in 1875, above referred to, laid down the principle that the railways should as much as possible be constructed and operated by the State.

The first railway connecting Batavia with Sourabaya via Semarang

was opened in 1894. The traffic was, however, still very slow and met with plenty of obstacles, one of which was the difference in gauges between the Netherlands Indian and the State Railways.

Improvements have gradually been made and co-operation between Government and private institutions has resulted in a fairly good rail- and tram-way system. There is a total length of 2,600 kilometres of railway and 2,300 kilometres of (steam) tramway.

There is ample scope for extension, and the Government program comports considerable improvements on old lines as well as a number of new constructions. Electrification is also suggested and the line Batavia-Buitenzorg will be the first to be run on electric power. Electric power has proved considerably cheaper than coal, and Java, with its immense quantity of water-power should experience little difficulty in constructing an electrified railway system, plans for which are already in existence. At some places where no railroad has as yet been constructed, motorbuses are running to meet local needs.

It is solely owing to the energetic action taken by Government and individuals that during the last twenty years Java has been able to expand her trade in the remarkable way she has done. What would have been the use of large sugar, tea and other estates without a thoroughly sound railway system ?

The teak forests and even the petroleum fields near Rembang could not have been exploited and nobody in the interior would have thought of industrialization. The quick development of Bandoeng to one of the finest towns of Java would have been impossible and health resorts like Garoet, Magelang and Tosari, which offer to Europeans such a pleasant climatic change, would have been quite far-distant spots.

The results obtained were also very satisfactory. In 1892 the total number of travellers on the Java railways was nearly 9 million and on the tramways 7 million.

In 1917 the figures were 55.5 million by train and 60 million by tram.

The goods traffic in 1892 by train amounted to about 0.5 million tons, by tram to about 25,000 tons. In 1917 these figures were 7 million and 2.5 million tons respectively. The "tramways", as they are always called, are merely secondary (narrow-gauge) railroads.

Java Express.—Times move quickly and the result apparently is that people want to do likewise. Up to now a train journey from Batavia to Sourabaya takes 30 hours, and since 1913 the minds of those in authority have been busy establishing a one-day service between the two most important business centres of the Dutch East Indies. In 1913 experimental trips have taken place on the line Tjikampek-Pegadenbaroe and these were repeated in 1915 on the section Tjikampek-Cheribon. The war has been blamed, and rightly so, for the delay in furthering the plans for the express service.

The speed during the trial trips was over 125 kilometres per hour, which is the world record on a 3.5 ft. gauge, and drew considerable attention from outside.

As a result of the trial trips the so called 2 Cr locomotive with two singly-working cylinders was changed to a 2 Cr locomotive with four cylinders, compound super-heater type with feed-heater. The capacities of locomotives and tenders were accordingly enlarged.

The designs were made in Java and the engines were built by the Company "Werkspoor" at Amsterdam in accordance with the two-cylinder prototype furnished by the Swiss Lokomotiv- & Maschinenfabrik at Winterthur, which gave complete satisfaction.

Another result of the trial trips is the building of longer carriages, which, owing to their length, do not vibrate so much, and which, with high speed, have considerably less air resistance, a factor which is apparently not only valuable to aeroplanes. These carriages are 18½ metres long and have trussed sides, the iron frame of which is constructed like a bridge.

They are therefore iron carriages (per unit of weight stronger than ordinary constructions); timber is only used for fastening the wooden partitions, which are preferable to steel ones in the tropics.

The AB carriages have 14 seats first class (A) and 24 seats second class (B). The C carriages offer 70 third-class seats athwart, whilst in the dining cars (F) 26 passengers can be accommodated.

Each of the carriages has an electric installation, run on one of the axles, which gives sufficient current for lamps and fans.

The carriages, ten of which will soon be ready, are being built at the well-known Beynes Works at Haarlem (Holland). The interior of the dining cars has been designed by the artist Willem Penaat.

Another 40 or 50 of these long carriages will be built in the Dutch East Indies.

The Railway Workshops at Manggarai.—These are (contrary to the old workshops which were built on the transversal system) constructed on the American longitudinal system, which means that extension of various departments can simply be made by elongating the building.

The entrance and exit rails have been laid in the middle with additional rails on each side, on which the locomotives or carriages can be placed by means of electrically driven cranes. These are constructed in such a way that a locomotive can not only be lifted from one rail to another but also over another locomotive and thence transported. Two cranes of 40 and two of 5 tons each are used, whilst another 5-ton crane transports heavy spare parts.

There are two buildings where cars can be lifted with the aid of four electrical cranes of 7.5 tons each and another building where the heaviest carriages can be transported by means of four 20-ton cranes.

A quick transport between the different departments and the stores is in the interest of an economical exploitation. In front of the buildings there is a 40-ton movable derrick. Further rails cross all the buildings whilst turntables are constructed on some of the crossings.

Many other devices are constructed in order to ensure quick and economic transport, as electro-motors, water-tower (which, by the way, is the highest in the Dutch East Indies), electrical installations etc., but

the main feature is the close connection which exists between the longitudinal system and the transport facilities.

With these new workshops, although not yet complete and fully equipped, the advantages of the longitudinal system over the transversal system are quite apparent.

According to a Government publication on " Information regarding some subjects of general interest " the Government program for extension and improvement of the railroad system includes : »

Java.—Constructing double track on sections with busy traffic ; improvement, extension, or reconstruction of important junctions, new lines to a total length of about 621 miles.

Sumatra.—New lines to a total length of about 1.678 miles.

Celebes.—New lines to a total length of about 683 miles.

Borneo.—Total new lines about 808 miles.

Bali, Lombok, Banka and Billiton appear on the program for new lines to a total length of 311 miles.

II.

ROADS.

Apart from the construction of rail- and tram-way lines there are important plans for road construction. The projects on the Island of Java comprise the construction and improvement of two main roads through the whole of the Island with five branch roads. At Sumatra 54 roads will be constructed to a total length of 2.859 miles.

It is evident that the energetic action taken by the Government will greatly assist a quicker development of estates and industries in the outlying districts of this vast group of islands. The above-mentioned Government publication states "The policy of the Railway as well as the Public Works Departments must essentially be a far-seeing one " and, further, " The construction of rails and roads must not be postponed till the necessity arises ; it should be done wherever possibilities of an economical development are but waiting for a stimulus to be transformed into a process of real industrial activity."

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NORWAY.

I.

RAILWAYS.

A.—LENGTH OF RAILWAYS.

Lines in regular operation	Length in kilometres		
	1/7/1914	1/7/1919	1/2/1921
<i>State Railways.</i>			
Gauge of the Rails 1 ^m 435	1,719	1,788	1,940
— — 1 ^m 067	992	995	910
Total State Lines...	2,711	2,785 ⁽¹⁾	2,850 ⁽²⁾
<i>Private Railways.</i>			
Gauge of the Rails 1 ^m 435	222	222	192
— — 1 ^m 067	110	135	135
— — 1 ^m 0	26	26	26
— — 0 ^m 75	96	83	83
Total of private lines...	454	466	436
General total of Norwegian lines..	3,165	3,249	3,286
With Double Track.....	20	33	33

¹⁾ In addition 35 km. in course of construction were operated at the company's expense.

²⁾ In addition 72 km. in course of construction were operated at the company's expense.

Among private railways the *Main Railway* (Hovedbane), 68 km. long, occupies a special position. It is, in part, under the same administration as the State Railways.

Probable alterations in the System in the Near Future.

A line of 158 km., with a gauge of 1 m. 435, will probably be in regular operation in 1921; the company will then no longer be financially responsible for the operations mentioned in the notes to the table. A section of the line will be reconstructed in order to change the gauge from 1 m. 067 to 1 m. 435.

B.—MAIN LINES.

July 1st, 1914.

1. Christiania-Moss-Kornsjo-Frontier, 170 km. in length,, (1 m. 435 gauge. Inter-Scandinavian line, with direct connection at the frontier with the private Swedish Dalsland Railway.
2. Christiania-Lilleström (double track)-Kongsvinger-Frontier (single track) 136 km., 1 m. 435 gauge. Inter-Scandinavian line, with direct connection at the frontier with the Swedish State Railway.
3. Christiania-Lilleström-(same track as 2)-Hamar-Elverum-Stören-Trondhjem, 561 km., 1 m. 435 gauge as far as Hamar; 126 km. from Christiania and afterwards a gauge of 1 m. 067.
4. Trondhjem-Moraker-Frontier, 102 km. 1 m. 435 gauge, Inter-Scandinavian line; direct connection at the frontier with the Swedish State Railway.
5. Christiania-Lilleström-Hamar (same track as 3)-Dombaas, 345 km., gauge 1 m. 435.
6. Christiania-Roa-Eina-Fagernaes, 210 km., 1 m. 435 gauge.
7. Christiania-Roa-(same track as 6)-Hønefoss-Bergen, 492 km., 1 m. 435 gauge.
8. & 9. Drammen-Hokksund (same track as 8)-Dandsfjord, 89 km., 1 m. 435 gauge.
10. Christiania-Drammen (same track as 9)-Larvik-Brevik- 202 km., and Skien 204 km., 1 m. 067 gauge.
11. Narvik-Frontier 39 km., 1 m. 435 gauge. Inter-Scandinavian line; direct connection with the Swedish State Railway.

July 1st, 1919.

The same as on July 1st, 1914; but the following line was also provisionally in operation: Notodden-Hjuksebo-Skien-Borgestad, with a length of 60 km., and a gauge of 1 m. 435.

February 1st, 1921.

See alteration on July 1st, 1919, and Railway No. 8.—The line from Christiania to Drammen was reconstructed in order to exchange the narrow 1 m. 067 gauge to the standard gauge of 1 m. 435; a line was put into operation between Kongsberg–Hjuksebo on the Notodden–Hjuksebo–Skien–Borgestad line, so that a continuous line was established from Christiania–Drammen–Kokksund–Kongsberg–Hjuksebo–Skien to Borgestad, 186 km.; with 1 m. 435 gauge.

Prospects for the Immediate Future.

See Railways No. 3 and 5.—In 1921 the line between Storen on line 3 and Dombaas on line 5 (158 km. in length, 1 m. 435 gauge) will probably be put into operation. Through traffic will thus be possible between Christiania and Trondhjem through Hamar–Dombaas–Storen on 1 m. 435 gauge.

See alteration on February 1st, 1921, and Railway No. 8.—The line No. 8 between Borgestad and Brevik has been reconstructed in order to change the 1 m. 067 narrow gauge to the 1 m. 435 gauge and will probably be available for traffic of that gauge. This will provide a through route, with 1 m. 435 gauge, between Christiania–Brevik through Kokksund–Kongsberg–Skien.

C.—TRACKS, BRIDGES AND VIADUCTS ON THE STATE RAILWAYS.

Upkeep.

The tracks, bridges and viaducts of the State Railways have been regularly kept in order both during and after the war.

Maximum Wheel Pressure Permitted.

Information on this subject can be found in "Radstandverzeichnis", The present pressure is indicated in the 1918 edition.

Prospects for the Near Future.

The line Christiania–Moss–Kornsje–Frontier (line No. 1) will have to be adapted within five years to the traffic of vehicles with a maximum wheel pressure of 10 tons.

D.—ROLLING-STOCK OF THE STATE RAILWAYS.

Information concerning the quantity of rolling-stock of the State Railways, the types in use, etc., can be found in the annual official railway statistics.

In recent years the rolling-stock was not sufficient to meet the requirements of the traffic, and the Norwegian Railways have continually had to borrow rolling-stock, both locomotives and trucks, from abroad.

The rolling-stock of the State Railway has been kept in normal repair both before, during and since the war, so that, generally speaking, the percentage of material under repair does not exceed that of normal times.

E.—TRAFFIC ON THE STATE RAILWAYS.

1. *Movement of Trains.*

Number of ordinary trains.	1/5/1914	1/6/1919	1/2/1921
Passenger trains, daily	329	291	266
— working days only	114	124	140
— Saturdays & holidays.....	92	77	48
Total passenger trains ...	535	492	454
Goods trains, daily	13	14	15
— working days only..	99	103	101
Total goods trains ...	112	117	116
Total number of trains	647	609	570

Number of trains in circulation per kilometre during the following financial years :

Length worked.

From 1st July 1913 to 30th June 1914.....	4,155
— 1918 — 1919.....	3,712
— 1919 — 1920.....	4,167

2. Number of Passengers.

Month or year	Number of passengers		Number of passengers out of the total who travelled with monthly season tickets.
	Total number	Increase + decrease —	
		%	
July 1914 about	2,130,935		
— 1918 —	2,552,985	+ 19.8	
— 1919 —	2,680,775	+ 5.0	
August 1914 —	1,827,097		
— 1918 —	2,674,122	+ 46.4	
— 1919 —	2,745,550	+ 2.7	
1/7/1913 — 30/6/1914	16,202,443		4,131,800
1/7/1918 — 30/6/1919	25,718,307	56.7	8,461,590
1/7/1919 — 30/6/1920	25,940,700	+ 0.9	8,449,880

The increase in the number of passengers was chiefly confined to short-distance journeys and consisted in an equal proportion of travellers holding season tickets and of travellers using ordinary tickets.

3. Goods Carried.

Month or year.	Total no. of tons of goods by fast and slow trains.	Increase + decrease —
		Per cent.
July 1914 about	423,388	
— 1918 —	411,710	+ 2,8
— 1919 —	356,666	+ 13,4
August 1914 —	400,320	
— 1918 —	425,799	+ 6,4
— 1919 —	408,326	+ 4,1
1/7 1913 — 30/6 1914 about..	6,559,230	
1/7 1918 — 30/6 1919 — ..	5,295,532	+ 19,3
1/7 1919 — 30/6 1920 — ..	5,160,300	+ 2,6

The increase or falling off in the quantity of goods is principally due to variations in the transport of ore coming from Sweden and being carried by the Norwegian Railway of Got (Ofetbauen) to Narvik.

F.—STATE RAILWAY TARIFFS.

1. Prices of Tickets (Scale of Charges for July 1914).

Ticket for Single journey.	Per Kilometre.					
	Slow Trains.			Express Trains.		
	1st Class.	2nd Class.	3rd Class.	1st Class.	2nd Class.	3rd Class.
	Ore.	Ore.	Ore.	Ore.	Ore.	Ore.
From 1 to 50 km....	9,-	5,-	3,-	11,4	6,2	3,8
» 51 » 150 »....	8,1	4,6	2,7	10,5	5,8	3,5
» 151 » 300 »....	7,2	4,1	2,4	9,6	5,4	3,2
» 301 » 400 »....	6,6	3,8	2,2	7,8	4,4	2,6
Above 400 ¹ km.....	4,8	2,7	1,6	6,0	3,4	2,0

¹ Valid from the 1st July, 1916; the previous tariff rates were a little lower for distances of more than 400 km.

Increases since July 1914.

The following provisional increases must be added to the above-mentioned rates :

	1st & 2nd class.	3rd class.
From 12th April 1917	20 %	10 %
» 1st November 1917	80 %	60 %
» 15th July 1919	100 %	75 %
» 1st February 1920	150 % ¹	125 %
» 1st September 1920	190 % ¹	140 %

2. Goods Rates.—Increases.

On the 25th May, 1915, the scales of charges for goods transport then in use were increased from 5.5 ore per 100 kilometres.

On the 1st September, 1916, a new scale was put into force, with a view to increasing the revenues of the railways; at the same time an additional 20 % increase was added to the new rates for goods carried by slow or fast trains, milk excepted.

In accordance with subsequent decisions, the provisional increase of transport rates to be added to the scale of 1st September, 1916, was fixed as follows :

Date of coming into force.	Milk.	Certain other food-stuffs.	Forage.	Manure and Fuel.	Other goods by slow or fast train.	Live-stock.
	P. cent.	P. cent.	P. cent.	P. cent.	P. cent.	P. cent.
1/5 1917....	—	20	20	20	30	—
1/11 1917....	50	70	70	70	100	50
21/7 1919....	80	100	100	100	120	100
1/2 1920....	100	130	130	130	160	130
1/7 1920....	130	—	—	—	—	—
1/9 1920....	160	160	160	160	200	160

¹ This only applies to the second class; the increase on the first class was more than double that on the second class. At the present time a scheme is under consideration for altering the scales, so as to obtain more revenue from passenger traffic.

A new scale of transport charges is under consideration with a view to adjusting the rates to the present value of the goods and to obtaining higher revenues from goods traffic.

G.—CONSUMPTION OF FUEL ON THE STATE RAILWAYS.

Date	Probable annual consumption in tons.	Actual cost of stocks per ton.	Prices paid for coal imported in the preceding 12 months per ton.
1/8/1914	About 160,000	About Kr. 20	About Kr. 20.
1/11/1918	» 225,000	» » 140	From about 90 to 210 Kr.
1/1/1921	» 230,000	» » 150	» » 170 to 236 »

In 1919 and in 1920 respectively the State Railways imported from America 20,000 and about 137,000 tons. In addition to these quantities the State Railways obtained supplies purchased in England.

H.—ECONOMIC SITUATION OF THE STATE RAILWAYS.

1. *Receipts and Expenditure during the years 1913-1920.*

Financial Year.	Receipts.	Expenditure.	Profit + and Loss —
	Kr.	Kr.	Kr.
1/7/1913—30/6/1914	28,335,978,13	25,288,062,85	— 3,047,915,28
1/7/1918—30/6/1919	79,589,006,88	85,033,655,65	+ 5,444,648,77
1/7/1919—30/6/1920	101,767,841,37	107,019,694,99	+ 5,251,853,62

To the expenses of the years 1918-1920 must be added the increases in wages, represented by the bonus for cost of living voted by the State. These increases amounted to :

For the year from 1/7/1918 to 30/6/1919 kr. 16,175,000.

For the year from 1/7/1919 to 30/6/1920 kr. 16,500,000.

2. *Budget (receipts and expenditure) for the years 1920-1922.*

The Budget for the years 1920-1921 and 1921-1922 contains the following items :

Financial Year.	Receipts.	Expenditure.	Profit + and loss —
	Kr.	Kr.	Kr.
1/7/1920—30/6/1921	117,663,000,—	115,756,600	+ 1,906,400,—
1/7/1921—30/6/1922	129,570,000,—	138,582,400 ¹	— 9,012,400,—

To the expenditure for the year 1920-1921 must be added the increases in wages represented by the bonus for increased cost of living voted by the State and estimated at kr. 16,000,000.

II.

MARITIME AND INLAND NAVIGATION.

Condition of Sea-ports.—The present condition of our sea-ports cannot be considered satisfactory. Owing to lack of quay space and quay equipment, cranes, hangars, bonding warehouses, and railway lines, traffic cannot be carried on sufficiently rapidly. At times our ports have been in a bad state of congestion, especially during the war. In spite of this state of affairs, the Norwegian ports, including those which do not possess modern equipment and which consequently do not appear in official statistics, have been able during this period to cope with a very considerable goods traffic.

All expenditure on construction in the commercial ports being defrayed directly from the port dues, and only very exceptionally with the assistance of the State or Commune, it is generally difficult to keep our ports equipped to meet modern requirements. On account of the strained economic situation and the considerable rise in prices during the last few years, this difficulty is now more acute than ever.

Nevertheless, during the years 1914-1920, kr. 1,350,000 were spent on port constructions, and in addition new constructions are shortly to be undertaken at a cost of kr. 2,800,000.

Canals are few in number and only of importance from the point of view of transport in the southern part of the country.

The Canal of Fredrikshald, provided with locks measuring 34 m. 5 in length, 6 m. 3 in width, and 1 m. 8 in depth, has dealt, during the years 1893-1914, with the following average amount of transport per year:

86,800 dozen tree trunks;
3,700 lock traffic (eclusages);

¹ For the year 1921-1922 the cost of living bonus amounting to Kr. 18,725,247 is included in the expenditure shown in the above table.

3,500 tons of wood pulp;
5,600 passengers.

During the year 1919:

9,600 dozen tree trunks;
3,300 lock traffic (eclusages);
4,550 tons of wood pulp.;
5,600 passengers.

The Bandak Canal, provided with locks of the following dimensions: 37 m. 75, \times 7 m. and 2 m., dealt during the years 1893-1914 with the following average amount of transport:

43,500 dozen tree trunks;
2,150 tons of goods;
17,200 passengers.

Condition of the Mercantile Marine.—The following table shows the comparative strength of the Norwegian Mercantile Fleet for the years 1914-1920:—

Year. ¹	Number.	Registered gross tonnage.	Registered net tonnage.
1914	3,325	2,648,661	1,784,471
1915	3,397	2,736,300	1,829,335
1916	3,428	2,753,177	1,815,493
1917	3,417	2,058,515	1,341,309
1918	3,474	1,892,287	1,223,900
1919	3,665	2,057,416	1,315,892
1920	3,828	2,429,232	

The number of vessels sunk by torpedoes or mines amounted to 824, with a combined total tonnage of 1,237,192 tons gross. 1,180 men perished ².

The discrepancies which appear to exist between the figures given in this table concerning our pre-war tonnage and those for the latter years of the war, during which a great number of ships were sunk by mines or torpedoes, are due to the fact that vessels under construction in the stocks are included in the tonnage statistics.

The floating tonnage, therefore, for those years was far from attaining the figures indicated in the above table.

¹ Extracted from Table I of *The Navigation of Norway, 1914-1918*, and in accordance with the Register of the *Norwegian Mercantile Fleet 1921*, Table I.

² *Navigation of Norway for 1919*, Table II.

Maritime Traffic.—The volume of traffic in the ports of Norway during the years 1914-1919 will be seen from the subjoined table, Annex No. 1, which gives the official figures for incoming and outgoing goods traffic between foreign ports and the principal ports of Norway in 1914 to 1919, and also for the Port of Christiania in 1920.¹

A summary of this traffic has also been drawn up for the towns in Norway for the period 1914-1919.

No statistics exist for the *transport of passengers by sea*, but to gain an idea of the amount of this transport it may be pointed out that on the line Bergen-Newcastle, during the years of the war, about 500,000 passengers were transported in each direction. Passenger traffic on the Norwegian line to North America (den Norske Amerikalinje) was also relatively more considerable during the war than in normal times.

The reason for this is to be found in the great numbers of nationals of the belligerent countries who were obliged either to choose the route via Norway, or to travel on neutral vessels.

The existing coasting-steamer service also underwent great changes during the war as regards the number of passengers carried. At one time the number of passengers was very large, in spite of the high prices of the tickets; but this number afterwards fell considerably owing to the general economic situation.

Transport of Goods.—The table below gives the value of the commercial exchange between Norway and foreign countries during the years 1914-1918:—

Year ² .	Value.		
	Imports.	Exports.	Total.
	Kr.	Kr.	Kr.
1914	567,277,000	410,022,000	977,299,000
1915	867,968,000	676,760,000	1,544,728,000
1916	1,353,665,000	988,333,000	2,341,998,000
1917	1,661,308,000	791,372,000	2,452,680,000
1918	1,252,564,000	755,055,000	2,007,619,000

Rates.—No statistics are available regarding the prices of tickets on steamships. However, the table given below, which indicates the prices of tickets on certain principal lines, gives an idea of the changes which have taken place during the last few years.

¹ From the *Navigation of Norway* (published by the Central Statistic Bureau) 1914-1919, Tables 12, 13, 14 and 15.

² *Norwegian Commerce*, Central Statistic Bureau, Table A, 1914-1918.

Lines.	Price in Kroner.			
	1914	1916	1920	1921
Bergen-Newcastle..... I Class.	72,00	108,00	200,00	180,00
— — III —	20,25	36,00	90,00	80,00
Christiansand-Fredriks- haven I Class.	15,00	15,00	45,00	45,00
— — III —	10,00	10,00	30,00	30,00
Christiania-Copenhagen I Class.	27,00	27,00	80,00	—
— — II —	17,00	17,00	80,00	—
— — III —	10,00	10,00	20,00	—
Christiania-Christiansand I Class.	15,00	19,50	46,80	46,00

The prices of tickets have been increased in the same proportion on other lines.

Freights.—In Norway, freights followed the fluctuations of the foreign market during the war as in normal times.

Tables 55, 56 and 57 of the *Statistical Annual* for 1919 give an idea of the state of affairs during the period 1914-1919 in the markets which particularly interest our country. As an example, we quote the following rates :—

Freight (Journey and nature of freight)	Freight in Kroner per ton				During the War
	1914	1915	1916	1917	
<i>Freight (Coal):</i>					
East of Great Britain to the ports of Eastern Norway:	7.54	15.22	32.40	176.10	up to kr. 300.00 (1)
<i>Freight (Corn):</i>					
North American States—Norway:	27.50	47.50	85.00	148.00	

(1) This high rate was due to war risks resulting from the fact that the vessels had to cross the blockaded zone.

Table 56.—This table gives in shillings and pence the average cost of freights during the years 1914-1919 between several important foreign ports, for example : Welsh Ports-Alexandria ; Welsh Ports-Genoa ; Welsh Ports-Le Havre ; Welsh Ports-Tyne-Barcelona ; Welsh Ports-New York-China ; Welsh Ports-La Plata-England, etc.

It also gives the minimum and maximum freights per month and for a fixed period of the same years, for the most important markets.

The following table gives the import of coal during the years 1913-1919 :

Year ¹	Coal (tons)
1913	2,276,808
1914	2,504,602
1915	2,758,507
1916	2,467,552
1917	1,059,465
1918	1,421,538
1919	1,547,886

It may be reckoned that about 25 % of these imports were used for shipping purposes. It should, however, be mentioned that the merchant fleet obtains most of its coal (bunker coal) in foreign ports and that this coal is not included in these statistics.

During the period 1914-1920 the average prices of coal per ton were the following :

1914	kr.	28.52
1915	kr.	43.95
1916	kr.	74.54
1917	kr.	94.34
1918	kr.	160.73
1919	kr.	129.32
1920	kr.	160.33

The economic conditions under which the shipping industry was carried on during the period in question (1914-1919) underwent several changes, but on the whole they must be considered very favourable.

In the second half of 1920, however, a reaction set in which has gradually reduced the shipping industry from the prosperity which it had attained in the previous period to a state of depression such as it has never known before.

The chief causes of this depression are the inordinate rise in the cost of repairs (reconstruction), the considerable losses suffered by a number of shipowners owing to the fact that they have had to cancel contracts for the building of new ships, for which several instalments had already been paid, and, finally, the greatly increased taxation.

¹ From the *Norwegian Official Journal of Prices*, No. III, 1920.

III.

TRANSPORT AND AIR TRANSPORT.

During the period 1914-1920 motor transport developed considerably throughout the country, both as regards the transport of persons as of goods.

The table given below contains a summary of the situation :—

In 1913	972	motor vehicles were registered			
In 1914	1,553	»	»	»	»
In 1915	2,033	»	»	»	»
In 1916	3,027	»	»	»	»
In 1917	4,430	»	»	»	»
In 1918	4,700	»	»	»	»
In 1919	7,639	»	»	»	»
In 1920	13,000	»	»	»	»

These figures are taken from the *Budget Tchème for the Administration of Bridges and Roads* for the financial year 1921-1922 (Storting Proposal, No. 1, Principal Article I, Chapter 6, Sections 1-10). (Section.)

On pages 35-44 other information will also be found regarding motor transport—the number of licences granted, taxes, etc. Further, these pages also contain a summary of regular motor services, both for the whole country and for the various provinces, giving the number of services, number of passengers carried, price of tickets, subsidies granted by the Postal Service, etc.

Air Transport.—This traffic does not yet possess any practical importance for the country. Trial flights with a view to postal and passenger transport have, however, been carried out with good results.

List of Works from which the above information has been taken.

- (1) *Norwegian Navigation*, 1914-1918, Central Statistic Bureau.
- (2) *Norwegian Commerce*, 1914-1916-1917-1918, Central Statistic Bureau.
- (3) *Statistic Annual*, 1918, Central Statistic Bureau.
- (4) *Regisser of the Norwegian Merchant Fleet*, 1914-1918, Navigation Office.
- (5) *Official Journal of Prices*, No. 111, 1920, Prices Controller's Office.
- (6) *Storting Proposal*, No. 1, Principal Article X, Motor Traffic: Administration of Bridges and Roads.

ANNEX

Movement

Customs Office. (Ports.)	Year.	Arrival in Norway.					
		In Cargo.		In Ballast.		Total.	
		Number.	Tons.	Number.	Tons.	Number.	Tons.
Fredriksstad..	1914	297	65,142	311	101,492	608	172,634
Christiania....	—	1,938	1,391,862	301	427,523	2,239	1,819,385
Drammen.....	—	352	139,022	96	25,701	448	164,723
Skien.....	—	204	99,247	12	6,029	216	105,276
Christiansand..	—	564	209,861	85	25,400	649	235,261
Stavanger.....	—	281	105,026	30	13,033	311	118,059
Haugesund ...	—	128	42,630	294	74,445	422	117,075
Bergen.....	—	747	532,056	97	49,947	844	582,003
Christiansund..	—	62	42,192	26	14,795	88	56,987
Trondhjem....	—	440	297,249	34	33,649	474	330,898
Narvik	—	51	86,340	316	758,738	367	845,078
Fredriksstad..	1919	151	32,397	87	35,365	238	67,762
Christiania....	—	1,533	1,122,483	87	92,795	1,620	1,215,278
Drammen.....	—	218	67,689	48	12,472	266	80,161
Skien.....	—	61	32,812	24	8,026	85	40,838
Christiansand..	—	287	94,779	15	3,376	302	98,155
Stavanger.....	—	127	69,913	12	5,808	139	75,721
Haugesund ...	—	101	35,267	83	26,325	184	61,592
Bergen.....	—	637	499,007	43	20,246	680	519,253
Christiansund..	—	48	25,171	18	9,164	66	34,335
Trondhjem....	—	171	111,378	28	16,545	199	127,923
Narvik.....	—	35	30,534	86	155,377	121	185,911
Christiania. ...	1920	—	1,006,612	—	1,433,539	2,010	440,151
	1914	7,515	3,845,397	2,588	1,881,491	10,103	5,726,888
	1915	8,615	3,852,975	2,196	1,491,218	10,811	5,344,193
	1916	7,805	3,673,642	1,625	1,036,056	9,430	4,709,698
	1917	3,755	1,871,455	815	551,726	4,570	2,423,181
	1918	3,370	1,649,907	698	295,280	4,068	1,945,187
	1919	4,914	2,527,112	1,180	528,939	6,094	3,056,051

No. I.

of Shipping.

Departures from Norway.						Gross freightage from foreign shipping.
In Cargo.		In Ballast.		Total.		
Number.	Tons.	Number.	Tons.	Number.	Tons.	
677	274,526	100	25,368	777	299,894	
1,176	968,207	382	463,682	1,558	1,431,889	
419	189,410	118	61,029	537	250,439	
244	124,513	15	8,191	259	132,704	
532	188,158	84	38,733	616	226,891	
99	38,625	158	60,046	257	98,671	
309	78,702	217	72,968	526	151,670	
568	369,422	270	183,771	838	553,193	
150	69,118	21	17,841	171	86,959	
382	258,534	47	33,049	429	291,583	
380	862,309	16	18,626	396	880,935	
167	84,249	94	26,612	261	110,861	
742	688,086	457	294,549	1,199	982,635	
284	123,190	65	19,041	349	142,231	
95	39,515	11	7,697	106	47,212	
280	87,388	28	16,197	308	103,585	
78	59,161	47	32,750	125	91,911	
179	63,013	46	19,845	225	82,858	
343	247,097	161	181,547	504	428,644	
59	28,439	17	8,972	76	37,411	
215	115,650	34	26,947	249	142,597	
168	220,340	6	4,259	174	224,599	
—	341,700	—	1,120,570	1,211	1,435,270	
7,839	4,304,054	2,291	1,334,982	10,130	5,638,836	211,478,085
8,362	4,020,865	2,634	1,397,220	10,996	5,418,085	359,856,459
7,603	3,557,944	1,784	1,176,264	9,387	4,734,208	761,813,067
3,500	1,844,425	1,067	615,238	4,567	2,459,663	580,376,095
3,087	1,597,615	993	368,729	4,080	1,966,344	305,723,370
4,313	2,233,199	1,700	806,372	6,013	3,039,571	

ANNEX No. II.

Statement regarding the Regime of Ports in Norway.

The commercial ports in Norway are administered by a Board Port Administration (havnestyre)—composed of 6 to 8 members. Two of these — the mayor and the prefect of police — are *ex-officio* members. The others are appointed for a limited time by the Municipal Council.

As, however, it is considered that the administration of port concerns not only the town itself but also the whole country, many important questions are submitted for the decision of the competent Ministry, or even for that of the Government.

Copies of the minutes of meetings of the administrative bodies of each port and also copies of the accounts of the ports are forwarded to the Director-General of Ports, who also has the power to call a meeting of the Port Administration whenever he thinks fit.

The chief questions affecting the administration of ports are settled by law, which applies to all commercial ports.

The budget of a port is independent of the town in which the port is situated.

Port charges are fixed either by law or by a resolution of the Municipal Council, approved by the Government.

The taxes established by law are as follows :

1. *Loading and lighthouse dues*, of which the State takes the proceeds.
2. *A supplementary customs duty* of 1 to 2 % levied on imports.
3. *Superintendence dues* (havnefogedpenge), calculated according to the capacity of the vessel.
4. *Tonnage dues*, calculated by various methods either on the net tonnage in the case of coast vessels or on the tonnage of the cargo in the case of vessels arriving from or departing for foreign countries.
5. *Mooring dues*, calculated on the capacity of the vessel.

The charges which the Municipal Council is authorised to levy are the following :

6. *Quay dues*, calculated in various ways in different towns, either on total tonnage or on the net tonnage of the vessel.
7. *Pilotage dues* in those ports in which pilotage is obligatory by royal decree.
8. *Ice dues*, levied in some ports during the winter months, calculated either on the tonnage of the vessels or on the quantity of goods.
9. *Duties imposed on goods*, calculated according to a scale approved by the Government, for the storage of goods on the quay or in sheds.
10. Finally, ports are authorised by royal decree to levy a special tax on goods transported across the quay in order to be loaded or unloaded.

As regards these charges, it must be noted that *no discrimination is made* according to the nationality of the vessel.

The rates are the same for everybody—there are only a few vessels engaged in the local coasting trade which enjoy the privilege of a reduction of harbour dues in certain ports.

The revenues of the port must, according to law, be utilised solely for the administration, upkeep and improvement of the port. The port budget is kept up almost exclusively by means of the above-mentioned rates. In special cases, the town agrees to defray part of the cost of the harbour works ; it is even more unusual for the State to render pecuniary assistance. Even the branch lines from the docks to the station are laid down and maintained at the expense of the port.

As the port revenues are comparatively small, whilst the cost of construction is, in the nature of things, very high, it is difficult to keep the Norwegian ports in a condition corresponding to present needs and to the development of communications. Nevertheless, great efforts are made to satisfy all requirements.

What is most needed in the Norwegian ports is plant in the shape of railway lines, cranes, hangars and warehouses. It has become all the more necessary to supply this deficiency of plant as the cost of loading and unloading has increased out of all proportion during the last few years.

The depth of water in the ports varies from 5 to 10 metres over the sills at ordinary low tide. All the principal ports have a depth of water sufficient to accommodate the largest vessels.

The administration of all the ports except town-ports is in the hands of the master-pilots ; the direction, as a matter of fact, is carried out by the Government department concerned, represented by the General Ports Administration. The Director-General of Ports is also responsible for the good condition of all docks used by public traffic.

Summary.—Norway endeavours to keep port dues as low as possible, and no difference is made, in calculating these dues, between the Norwegian and foreign flags.

The amount of the port dues is fixed by law or under the control of the Government. It is therefore impossible to bind Norway to fixed tariffs. Any question relating thereto must be dealt with either by Parliament or by the Government.

The use of Norwegian ports is absolutely free, on a footing of perfect equality for all.

PANAMA.

By reason of its geographical position, the Republic of Panama should be of exceptional importance as regards international transport, since it occupies the Isthmus of Panama, which unites the two parts of the American Continent, and has for centuries attracted the attention of the whole world. It was realised that if the isthmus were pierced it would become the shortest line of communication between the two oceans. This has now been accomplished; the great inter-oceanic route has been opened, thanks to the intelligent and energetic efforts and generous resources of the United States of North America, and thanks also to the sacrifices made by the little Republic, which was ready to give up a part of its territory for the good of humanity, *pro mundi beneficio*, in the words of her national motto.

But since the Panama Canal belongs to the United States, as also does the Trans-Isthmian Railway which runs alongside the Canal, and since the jurisdiction over this strip of territory was ceded to the United States by the Republic of Panama under the terms of the Treaty of November 18th, 1903, it follows that the importance of its situation has very much diminished from an international point of view, as most international traffic now passes through the terminal ports of the Canal, Cristobal on the Atlantic, and Balboa on the Pacific.

The Republic is, however, in a particularly favourable position as regards lines of navigation, since vessels of more than 40 companies call at the Canal ports, the quays of which are only a very short distance from the towns of Panama and Colon.

The Panama authorities have free access to these ports under the terms of the above-mentioned Treaty, in order to inspect the transit of passengers and goods coming into the Republic.

A few shipping lines also call at the port of Bocas del Toro on the Atlantic, which is within the territory and under the jurisdiction of the Republic of Panama.

There is no national steamship or sailing line plying regularly along the Canal; nor is there a sufficiently important trade between the Atlantic and the Pacific coasts to justify such a service, as passengers and goods are carried on foreign vessels or by rail.

There are in the Isthmus two railways-lines open to the public; the first, which joins Panama to Colon, and which is situated almost entirely within the zone of the Canal, belongs, as already mentioned, to the United States, who acquired the Panama Railroad Company at the time when the rights of the French Canal Company were transferred in 1903; the second, a local line in the province of Chiriqui, runs between the port of Pedregal and Boquete, and belongs to the Government of Panama. This line has been working since 1914.

The first line, which has a length of 80 km., serves for the transport of passengers and goods between Panama and Colon, and also between the two Canal ports. Panama merchants have frequently complained of the high rates prevailing on this line, and the Panama Government is in negotiation with the Government of the United States with a view to obtaining a reduction in these rates, as well as in those of the ships of the Panama Railroad Company, which are also owned by the United States and ply between New York and Cristobal.

The second line is a narrow-gauge railway, which, starting from the port of Pedregal, passes through David, the capital of the province of Chiriqui, and goes as far as Boquete (60 km.) with branch lines to Potrerillos (13 km.) and to La Concepcion (31 km.). This line serves chiefly for the transport of the produce of this rich agricultural district, such as tobacco, coffee, cocoa, etc.

The following are the detailed import and export figures for the year 1916:

IMPORTS.		Tons.
United States of North America	93,227.14	
China	6,030.32	
Great Britain	3,228.67	
Chile	1,624.39	
Spain	348.91	
France	377.75	
Colombia	285.57	
British West Indies	332.19	
Japan	228.15	
Sweden	253.07	
Salvador	757.65	
The Netherlands and Possessions	297.67	
Cuba	92.68	
Italy	73.11	
Costa Rica	25.67	
Norway	4.82	
Switzerland	1.89	
Total.	107,189.65	

EXPORTS.

	Tons.
United States of North America	136,553.51
Great Britain	110.88
Canal Zone	623.13
Italy	150.44
Spain	0.42
Total.	<hr/> 137,438.39

PARAGUAY.

Situated in the centre of South America, and therefore far removed from the sea-coast, Paraguay would seem, as a result of her position, to be classed amongst those countries which are deprived of the great advantage arising from unhindered contact with the world — one of the vital conditions of a prosperous existence and rapid progress. The isolation of Paraguay, however, is more apparent than real, and the disadvantages of her situation are only relative.

She is, in fact, brought within reach of world-commerce by the means which Nature has generously placed at her disposal. These means are, on the one hand, the numerous rivers flowing through her territory, many of which are navigable, or would be so if certain easily practicable works were carried out ; and on the other hand, the two famous, noble and magnificent arteries which convey her produce to the markets of the world, and which bring her in exchange those articles of foreign manufacture which she requires for her own use — the rivers Parana and Paraguay, which flow through her entire length, one forming her eastern and southern border, and the other dividing her into two nearly equal parts along her whole length from north to south.

Access to the sea is obtained on the one side through the Argentine and Uruguay, and on the other through Brazil; these countries, like Paraguay herself, have proclaimed as an indisputable principle free navigation for international traffic on these waterways, and have always been ready to throw open their own rivers for this purpose. Paraguay thus enjoys all possible facilities, including the great advantages which her neighbours and friends have so generously accorded her for her transit.

It must with regret be stated that hitherto Paraguay has been amongst those South American countries whose railway system is the least developed. The country has, however, made great efforts in this direction, and has at length, and in face of enormous difficulties, connected her main line with the extensive and prosperous lines of the Argentine ; she thus obtains through communication with the great metropolis of La Plata, Buenos Ayres, that great centre of civilisation and progress which is a harbour of considerable importance and, at the same time, the principal centre of consumption for the produce of her soil.

Paraguay possesses other lines of a more local character. One of the most important of these is at present in course of construction by a commercial company ; 40 kilometres have already been opened for public use. This line leaves the town of Concepcion, passes through the villages of Belen and Horqueta, and is to reach by this route the frontier of Brazil.

The other lines, which, taken together, also amount to a considerable number of kilometres, have been built by large timber and tannin concerns for the purpose of conveying their raw materials to the places where they are to be manufactured, or to the banks of waterways in order to be shipped abroad.

The progress which was manifest in every sphere of national life before the world-catastrophe of 1914 was particularly marked in the rapid advance made in routes of communication and transport, particularly as regards railways, which were rightly considered to be the barometers of national progress. Thus, a beginning had been made with the construction of a line of exceptional importance which was to cross Paraguay from west to east. This line was to have ended on the Paraguayan side opposite the famous Iguazéa cataracts on the banks of the Parana ; here it was to join a Brazilian railway, by means of which it would have reached the well-known port of San Francisco on the Atlantic coast. Of this line scarcely thirty kilometres have been built and opened for traffic.

Another railway of no less importance, the construction of which was conceded to a large firm, was to join, above the Guaira — one of the most wonderful cataracts in existence — a railway belonging to the neighbouring country which, starting from Rio de Janeiro, the fair and noble capital of the Republic of Brazil, would have ended at the same spot.

As regards her land-routes also, Paraguay relies upon the friendship and spirit of concord which unite her with her neighbours and the good-will and broad spirit of international liberalism for which she can find nothing but praise.

PERSIA.

During the meeting of March 14th, 1921, the Persian Delegate, addressing the Conference, had the honour to point out the importance of the geographical situation of his country from the point of view of international communications. He emphasised the important part played by Persia in the past, and the services which it was called upon and was determined to render to trade between the West and the East in the future.

The Persian Representative also made a brief reference to the trials undergone by his country before and during the great war ; he enumerated some of the obstacles due to foreign influences, which have hitherto paralysed Persia and have deprived her of those modern means of transport which are indispensable for her development.

In fact, Persia lacks railways, and at the present moment transport unfortunately has to be carried on for the most part by caravan (on camel and mule back) and by carts. It is, therefore, not easy to give positive replies to the questionnaire submitted by the Secretariat of the Conference, and one chapter of this statement will necessarily deal with roads.

Nevertheless, this vast and rich country, with a surface area of 1,647,000 km. square and a population of 10,000,000 inhabitants, has been endowed by Nature with the conditions necessary to assure her restoration and prosperity — a temperate climate, direct access to the sea, both to the North and the South, a fertile soil, a hard-working trading population, iron and coal mines, and an abundance of petroleum.

Therefore, the new Persian Government, anxious above all to restore the country to prosperity, has drawn up a whole programme of reforms including in particular the development of means of transport and reforms, of a financial and economic nature. It intends to encourage, as far as possible, the construction of railways and ports, the establishment of motor transport services, the exploitation of mines, irrigation works, etc.

Experts from all countries may take an active part in this reconstruction, and foreign capital may be employed.

The intended connection of the future Persian railway system, on the one side, via Bagdad, with the lines which reach the Mediterranean, and on the other side, Askabad, with the Trans-Caspian railways and the Trans-Siberian and Chinese railway systems, will bring Persia nearer to Europe and will, at one stroke, open the great markets of Central Asia and

the Far East to the industries of the West, and will supply the latter with an abundance of the raw materials which they need.

The future Paris-Pekin Railway will cross Persia, and also the line connecting British India with Russia.

Persia has treaties of commerce, navigation and friendship with 23 foreign countries. The Persian Government desires to conclude fresh Treaties and to submit those which already exist to revision, in accordance with the principles laid down in the present Conference and also with respect for the complete independence of Persia (political, economic and juridical).

We desire above all the free transit of goods and of the products of all foreign countries to our markets by any and every route, and particularly by those which are as yet closed to us, that is, by the railways of the Caucasus, Batum-Tiflis-Baku and Batum-Tiflis-Djulfa.

This route was in use for foreign commerce about 40 years, but in 1880 the Tsar prohibited transit via Batum, and thus arrested the development and prosperity of the whole of Northern Persia.

Thus our report will be divided into five parts: (1) Railways; (2) Roads; (3) Maritime Navigation; (4) River Navigation; (5) Comparative Table of Foreign Trade for the years 1913-1919.

I.

RAILWAYS.

Persia is extremely poor in railways, although for the last 50 years numerous schemes have been formed and elaborated.

The policy of the former Russian regime was in general opposed to the development of neighbouring countries, and obligations were extorted on several occasions from the Persian Government for periods of 20 years, compelling it to refrain from granting concessions and constructing railways.

Persia has thus been deprived of the essential means of progress and regeneration.

The only existing railways are the following:

(a) *Djulfa Railway, on the Caucasian frontier, running to Tabriz, with a branch from Sophian to Sharifkhanek, on the borders of Lake Urmia, and a navigation service on Lake Urmia.*

This railway, the total length of which is 192 km., is at present the only railway of any importance. The concession for this line was granted by the Persian Government in 1913 to the Russian Discount Banking Company of Persia.

It was opened in 1916, but at first was only used to supply the Russian Army, which was fighting against the Turks on Persian territory. Russia prevented the import of provisions and other products required for the needs of Persia. At the time of the Russian revolution the Bolshevik soldiers, in their retreat, removed nearly all the waggons and locomotives. There only remained 10 goods trucks out of 276, 3 locomotives out of 22, and 2 passenger coaches out of 20. In order to avoid bankruptcy, the Russian Company had to loan to Persia 5,000,000 krans, and the rolling stock was held as a guarantee. The working of this railway, which was thus suspended, has now been restored with the available rolling stock. When peace has been restored in Russia, and when regular traffic across the Caucasus is resumed, this line, which connects Batum and Tiflis with one of the most important towns in Persia (Tabriz : 210,000 inhabitants), will be called upon to render numerous services to trade and may attain great importance. The fuel used on this line is petrol, as is the case also on the Caucasus railways. The gauge is the same as in Russia.

The navigation service of barges and tugs was in operation for commercial purposes on Lake Urmia. It was suspended during the war, but will probably soon be revived. All vessels are worked by petrol motors.

The branch of the railway reaches the shore of the Lake at Sharif-Khaneh. The railway company has already constructed a port there, with a large wharf and mole. This port will be the centre for all goods destined for, or originating from, the regions of Selmas (North-West of the Lake), Urmia (West of the Lake), Kurdistan (South of the Lake), Maragha (South-East of the Lake).

These regions will be served by the respective ports of Khanlakhté, Ghermkhaneh, Sulduz and Danalu. At all these places the company had begun to construct wharves and installation for the harbourage of vessels and the loading and unloading of goods.

Works on the new railway between Baku and Djulfa, which was to skirt the Arax, have been suspended owing to political disturbances. They will probably not be re-started for a long time.

(b) Bushire-Borazdjan Railway.

A railway, 50 km. in length, has recently been built between Bushire and Borazdjan.

This line has been open for the conveyance of passengers since April 1st, 1919. The fares are as follows :

Ordinary train leaving Bushire to Ahmadi and vice-versa : 3 krans ; from Ahmadi to Borazdjan and vice-versa : 2 krans.

Special commercial train twice a week, on Mondays and Fridays, to Bushire and Ahmadi and vice-versa : 9 krans ; from Ahmadi to Borazdjan and vice-versa : 6 krans.

(The average value of the kran in 1919 was 1 franc.)

This line will be open shortly for the transport of goods also.

(c) *Piri-Bazar-Resht Railway.*

A transport service by steamships and sailing vessels for passengers and goods has been established between Enzeli (a Persian port on the Caspian sea) and Piri-Bazar as far as Resht. The fare between Enzeli and Resht is 8 to 10 krans per person. Goods cost one kran per pood. The length of the railway is about 12 km.

(d) *Shahtakhté-Maku-Bayazid Railway.*

(Connecting the North-West frontier of Persia with the North-East frontier of Turkey.)

This line, which is about 100 km. in length, is not at present in operation. Like the line from Djulfa to Tabriz, it was used for the military needs of Russia during the war.

(e) *Teheran-Shab-Abdul-Azim Railways.*

The oldest Persian railway in operation is that which connects Teheran to Shab-Abdul-Azim, the length of which is 9 km. This line was operated by the "Société Anonyme Belge de Chemins de Fer et Tramways en Perse". It carries on an average 690,000 passengers per year. The total receipt are 50,000 tomans and the expenses amount to 26,000 tomans. (In 1919 a toman was worth about 10 francs).

(f) There also exists between Mahmud-Abad (on the Caspian Sea) and the iron mines of Amol, a railway 16 km. in length, but it was suspended a long time ago.

It might be of interest to indicate the most important schemes for projected railways which have been, or are at present, under consideration and the international lines which end at the Persian frontier :

1. On February 9th, 1913, the Persian Government authorised the Persian Railways Syndicate, Ltd., to investigate the possibilities of constructing a railway connecting Mohammerah or Khur-Mussa (on the Persian Gulf) with Khorremabad. The preliminary survey is being made.

(2) The extension of the Djulfa-Tabriz railway to Teheran is under consideration. This line would connect the capital of Persia with Batum (on the Black Sea).

(3) The Persian Government is considering schemes for railways connecting the capital with the Trans-Caspian Railway system (Krasnovodsk-Askabad-Merv and the Afghan frontier, which skirts the North-Eastern frontier of Persia), and also with the Bagdad railway, which at present ends at Kuretu, on the Western frontier of Persia.

(4) It should also be noted that the Indian railway from Quetta to Nushki touches the Persian frontier at Duzdab (Seistan).

(5) It will be remembered that in 1912 an important scheme for a Trans-Persian railway was conceived by an international company. The headquarters of this company, the capital of which amounted to 2,500,000 francs, was at Paris. It proposed to establish a railway system which, crossing Persia, would connect the Russian railways with the railways of British India.

II.

ROADS.

There are twenty-eight main roads in use for traffic with foreign countries and between the various regions of the interior. Of these, some are roads maintained by the concessionaries, who have the right of levying certain tolls; others are natural roads either wholly or partially fit for vehicular traffic; and finally there are others only suitable for caravans.

A. The total length of the roads suitable for vehicular traffic is 1,598 kilometres. The principal ones are those linking the important centres of the interior to the Persian frontiers. These roads run:

(1) From Enzeli (Persian port on the Caspian Sea) to Teheran (350,000 inhabitants) via Resht and Kazvin. This road, which is 382 kilometres in length, connects Russia with the capital and principal towns of Central Persia. Transport on this road is carried on by horse-drawn vehicles, motor-cars, and motor-lorries.

Since the construction at Enzeli of a double pier allowing vessels to enter the inner harbour and to berth directly at the customs wharf except in very stormy weather, the traffic on this road would increase but for the state of war existing in the Caucasus.

At the present time the following dues are collected:— 1) on each vessel entering a charge of 10 chais per net legal ton of burden; 2) a charge of two chais per pood of goods loaded or unloaded; 3) a charge for pilotage of 3 chais per net legal ton. (The chais was worth about 5 centimes in 1919.)

The company holding the concession levies the following passage dues:—

	loaded	unloaded
(a) From Enzeli to Resht; Per 4-horse vehicle	20 krans	10 krans
Per 2-horse vehicle	5 »	2.50 k.
Per camel, horse or mule	1 »	0.50 k.
Per motor car for 4 persons and under	20 »	
Per motor car for more than 4 persons	40 »	

(b) From Resht to Teheran :

Per 4-horse vehicle	59 k. 10 ch.	29 k. 15 ch.
Per 2-horse vehicle	23 k. 18 ch.	14 k. 9 ch.
Per 4-horse waggon	70 k. 11 ch.	35 k. 6 ch.
Per horse, mule, camel or donkey . . .	4 k. 14 ch.	2 k. 7 ch.
Per motor car for 4 persons or under .	120 krans.	
Per motor car for more than 4 persons	240 krans.	

Passengers :

From Enzeli to Resht, there is no regular posting service; passengers always find plenty of small two-seated carriages, at a charge of 8 to 10 tomans, which cover the distance in 3 hours, or motor cars which charge 4 tomans per seat. Local boats run a regular service between Enzeli and Piri-Bazar, the passengers then going on to Resht rail; the price of the journey is from 8-10 krans.

From Resht to Teheran, a relay posting service which formerly used to allow of the journey being accomplished in 2 or 3 days, has practically ceased to exist. The prices charged have been extremely high and variable, and the duration of the journey longer than before the war.

*Goods Transport :**(a) From Enzeli to Resht.*

Average duration : *(a)* by road, 1 day.

As the "Persian Transport Bureau" has discontinued its services, there is no longer any regular means of transport on this road, and private arrangements have to be made with individual carrie's.

(a) by water, as far as Piri-Bazar and by land from Piri-Bazar to Resht, from 2 to 3 days. This route is the most economical and almost the only one used. The price varies according to the seasons and the amount of goods to be transported; the average price charged is one kran per pood.

The following passenger dues are levied on the route from Piri-Bazar to Resht :—

Per two-horse vehicle	1 Kran 70
Per one-horse vehicle	0 » 85
Per pack horse	0 » 30

(b) From Resht to Teheran.

Average duration : by cart, 15 days; by caravan, 20 days.

Owing to present conditions it is impossible to fix an average price for the transport of goods, which reached 80 tomans per kharvar of 100 Tauris batmans; the posting service charges 6 tomans per person for the journey by gari (waggon).

The posting service carried passengers during part of the year in motor-lorries, at a price of 35 tomans per person; a few private indivi-

duals have also transported passengers by means of touring-cars at various prices, but these services were quite unorganised.

(3) *From Djulfa to Tabriz.*

This road of about 120 km. has lost its former importance, owing to the opening of the Djulfa-Tabriz Railway. The railway, in fact, has replaced the road; both were constructed by the same company.

At present the railway is working very irregularly owing to the disturbances which are continually occurring in the portion of the Caucasus traversed by the Tiflis-Djulfa Railway, of which the Djulfa-Tabriz line is the continuation.

(4) *From Astara (Port on the Caspian Sea) to Tabriz, the great commercial centre of North Persia, via Ardebil.*

Astara serves principally as a centre for goods proceeding to Ardebil and Tabriz.

There is a road of about 80 km. running from Astara to Ardebil, built and operated by a Persian limited liability company. This road is suitable for vehicular traffic throughout its length at all times of the year. The average cost of horse transport is 25 tomans for a three-seated carriage drawn by 3 horses, the journey taking 15 hours. The company levy a passage-due of 7 chais per loaded donkey and of $1\frac{1}{2}$ krans per pack camel, horse or mule. (These charges are reduced by half in the case of unloaded animals.) In addition, a charge of one kran is made per ox, cow, etc., and 5 chais per sheep. The average length of the journey by caravan is two days, and the price for the transport of goods amounts to 20 krans per mule load of ten poods.

From Ardebil to Tabriz goods are carried on a track unsuitable for vehicular traffic. The whole journey from Astara to Tabriz can be covered in 9 days; the cost varies.

Goods are sent from Astara to Ardebil by camels, mules or donkeys and from there to Tabriz by camels.

(5) *From Askabad, principal town of Transcaspian Russia on the railway from Turkestan to Meshed (70,000 inhabitants), capital of the Persian province of Khorasan via Kuchan.*

This is a main artery for the commercial traffic between Russia, Turkestan and Eastern Persia.

The total length of this road is about 250 kilometres and it is at present operated by the Ministry of Public Works, which levies dues. It is suitable for passenger vehicles, carts and caravans, as it has recently been repaired to allow of the passage of vehicles.

Passenger Transport :

- Posting vehicle : Askabad-Bajghiran, 6 to 9 hours.
 Bajghiran-Kuchan, 12 to 18 hours.
 Kuchan-Meshed, 20 to 28 hours.
 Askabad-Kuchan, 2 days.
 Askabad-Meshed, 3 days.
- Posting waggon : Askabad-Meshed, 3 to 6 days.
- Ordinary vehicle : Askabad-Kuchan, 3 to 4 days.
 Askabad-Meshed, 5 to 6 days.
- Ordinary waggons : Askabad-Kuchan, 3 to 4 days.
 Kuchan-Meshed, 5 to 6 days.

Goods Transport :

- By waggon : Askabad-Bajghiran, 1 to 2 days, 20 to 30 krans per 100 batmans.
 Bajghiran-Kuchan, 3 to 4 days, 30 to 40 kr. per 100 batmans.
 Kuchan-Meshed, 4 to 5 days, 40 to 50 kr. per 100 batmans.
 Askabad-Meshed, 8 to 14 days, 80 to 140 kr. per 100 batmans.
 Askabad-Kuchan, 4 to 8 days, 40 to 70 kr. per 100 batmans.
- By caravan : Askabad-Bajghiran, 2 days, 15 to 20 kr. per 100 batmans.
 Bajghiran-Kuchan, 3 to 4 days, 20 to 28 kr. per 100 batmans.
 Kuchan-Meshed, 12 to 16 days, 35 to 45 kr. per 100 batmans.
 Askabad-Meshed, 12 to 16 days, 75 to 90 kr. per 100 batmans.
 Askabad-Kuchan, 6 to 8 days, 40 to 60 kr. per 100 batmans.

(6) From Kazvin to Hamadan.

Road conceded to the same company, which holds the concession for the road from Enzeli to Teheran, length 224 km.

(7) From Teheran to Kum and Sultanabad.

Length 280 km. This road is much used, especially by pilgrims proceeding to the holy town of Kum.

*(8) From Djulfa to Khaf, length 90 km.**(9) From Teheran to Demavend, length 72 km.*

B. Carriage roads laid with stone, of a total length of 4,500 km., on transport is carried on by waggon.

The following are the principal roads of this kind.

(1) Trebizond (on the Black Sea) - Tabriz-Teheran.

Owing to the absence of transport facilities over the Caucasus, goods from European countries except Russia, destined for the North-West

of Persia, which are too heavy or too bulky to be sent by the posting services, must all follow this road. The distance from Trebizond to Tabriz is about 1,100 km., and from Tabriz to Teheran 630 km. On Persian territory the road is practicable for vehicles from Khoi to Tabriz and from Tabriz to Teheran. Tabriz can be reached from Trebizond on horse-back in 20 days. From Tabriz to Teheran there are no posting relays, but the distance may be traversed in about ten days by means of vehicles belonging to private carriers.

Transport of Goods.

(a) From Trebizond to Tabriz :

Average length of journey : during the summer 75 days, during the winter 45 days.

Average cost¹ : (1) Imports (Trebizond to Tabriz) : in bales, about 390 krans per cantar of 230 kgs ; in cases, about 420 krans per cantar. (2) Exports (Tabriz to Trebizond) : 140 krans per camel-load of 80 batmans.

(b) Tabriz to Teheran :

Average length of journey : by horse, 25-30 days ; by camel, 40 days.

Average cost¹ : (1) by mule and horse, 5 krans per batman of 1,280 miscals ; (2) by camel, 4 krans per batman of 1,280 miscals.

The total journey from Trebizond to Teheran may be completed in three months. The cost from Tabriz amounts to 75-80 tomans per 100 batmans.

(2) Khoi to Tabriz : 136 km.

(3) Khoi-Urmia-Savuchbulagh : 190 km.

(4) Quetta-Nushki (British India) to Meshed via Seistan.

This is a very fine road fit for vehicular traffic along its whole length. It has been kept in perfect order and was improved during the war, and is used for the traffic of goods from Bombay and Karachi.

The present terminus of the railway which has been built from Nushki to Seistan is Duzdab, 52 km. south of Malek-Siah (on the South-Eastern frontier of Persia).

(a) Road from Kuh-Malek-Siah to Nosratabad (Seistan), 155 km. This road is used by motor-lorries. Transport by caravan from Kuh-Malek-Siah to Nosratabad takes 5 to 6 days.

¹ These transport prices were those in force before the war. In view of the disturbed state of Armenia, through which goods from Trebizond to Persia must pass, traffic is very much reduced.

(b) Road from Nosratabad to Birjond, 384 km. This carriage-road, which has been greatly improved, may be used by motors. Length of journey by caravan, 14 or 15 days.

(c) Road from Kuh-Malek-Siah to Birjand, via Palang Kuh and Konek 456 km. Extensive works have been carried out to put this road into working order, and to bring water along its whole length.

This road is at present used by motor-lorries. It is very safe and it is the shortest motor-route from India to Birjand and Meshed.

The journey by caravan from Meshed to Kuh-Malek-Siah - Birjand takes 15 days.

(d) The road from Birjand, to Meshed via Torbat, 456 km. A natural road for vehicular traffic, used by motors. Extensive works will be undertaken upon it in order to allow waggons and motors to use it for fast traffic.

From Birjand to Meshed the journey by caravan takes 20 days.

(5) *Herat (Afghanistan) to Meshed viâ Keriz and Torbat-Sheikh-Jan.*

Natural carriage road to the frontier, 240 km. Average length of journey from the Persian frontier to Meshed : 8-12 days. Average cost, 150-200 krans per 100 batmans.

(6) *Meshed to Teheran.*

This is a carriage-road 900 km. long; it is used particularly by pilgrims proceeding to the holy town of Meshed.

(7) *Baghdad to Teheran viâ Kermanshah.*

This road was of great importance even before the war, as it served for traffic with Mesopotamia, and was used by pilgrims to the holy towns of Kerbela and Nejif; it has become even more important now that a railway line has been built from Basra to Baghdad, with an extension to the Persian frontier. It is maintained in good condition, and is connected with Hamadan and with the road to Kazvin and also with that from Kazvin to Teheran. The future Baghdad-Teheran railway will take this road.

Distance from Basra to Baghdad, 820 km. along the Tigris; from Baghdad to Teheran 800 km. by carriage-road. The road from Baghdad to Kermanshah has been rendered available for the transport of goods, and is now quite safe. Goods, unloaded at Basra, are sent up the Tigris as far as Baghdad, and are forwarded to Kermanshah by various means. All restrictions imposed during the war on imports and exports from Mesopotamia have been abolished. Trade has, therefore, again become entirely free. Moreover, goods in transit through this territory do not, at present, pay more in transit charges than one-tenth of the import dues.

The Pushti-Kuh road has been completely abandoned in favour of the Baghdad-Kasri-Shirin road. Its position is, therefore, what it was before the war, that is to say, that the Ali Garbhi or Amara road is only used for the goods importation into Persia of destined for the inhabitants of the Pushti-Kuh territory.

The use of the railway from Baghdad to Ghezel Rabat, the last station open for passenger and goods traffic, (although the rail has reached Kuretu, a place situated on the frontier, about 13 km. north of Kasri-Shirin) has resulted in a considerable decrease in the cost of transport. The decrease in the price of cereals has also appreciably contributed to this reduction.

The *tcharvedars* are in charge of the forwarding of the goods by railway. At the point of departure they group these goods in such a way as to form complete loads, as the railway administration does not accept other methods of transport. Registered parcels will not be accepted until later, when the operation of the line by the military authorities has terminated.

The following are the new transport rates :

1. *Goods*.—The cost of transport per kharvar and length of journey:

(a) By *tcharvedars* :

From Baghdad to Kermanshah, including cost of transport by rail : 250 krans, about 12 days.

From Kermanshah to Hamadan : 220 krans, about 6 days.

From Hamadan to Teheran : 250 krans, about 11 days.

(b) Per posting waggon :

From Khanikim to Kermanshah : 350 karns, 3 days.

From Kermanshah to Hamadan : 350 karns, 3 days.

2. *Passengers*.

	By wagon	By carriage to hold 4	By carriage to hold 8
From Khanikin to Kermanshah	90.50	718	586 krans.
From Kermanshah to Hamadan	73	668	516

Length of journey : 30 to 40 hours.

Private carriages may be hired on similar terms.

(8) *Ahwaz (situated on the river Karun) to Teheran by Ispahan.*

This road serves for traffic from Mohammerah (a port on the Persian Gulf situated at the mouth of the Karun). Goods are loaded on vessels plying on the river, and are unloaded at Ahwaz ; total length of journey, 865 kilometres.

(9) *From Bushire (Persian port situated on the Persian Gulf) to Teheran via Shiraz (50,000 inhabitants) and Ispahan (80,000 inhabitants.)*

This road is 1,332 kilometres long. The importance of the section from *Bushire* to *Ispahan* has decreased since the road *Mohammerah-Ispahan* has been used for traffic ; this road is chiefly used for the transport of goods to *Shiraz*; the "kotals", or steep rocks on this road, between *Bushire*

and Shiraz are difficult to surmount. It may be divided in four sections, three of which are only possible to caravans, while the other has recently been rendered available for vehicular traffic.

The road from Shiraz to Ispahan is also suitable for vehicular traffic.

(10) *From Bender-Abbas, a port on the Persian Gulf to Kerman (70,000 inhabitants).*

This road, which is 520 kilometres long, is divided into four sections, one of which has recently been rendered available for vehicular traffic.

Note.—The above information applies to times when commercial relations are normal, which is not yet the case. In consequence, of the Great War, from which Persia has also suffered, the high-roads have been greatly disorganised, and goods from Europe are not carried by the roads running to the North beyond Iran. If free transit is granted across the Caucasus, the former caravan road from Trebizond to Tabriz will be completely abandoned.

As a result of the high price of forage and the frequent lack of means of transport, the cost of forwarding goods is variable and very high.

Motor Transport.

Motors and motor-lorries run on most of the Persian routes available for vehicular traffic, but no regular service has yet been established. Schemes are at present under consideration, and negotiations have been entered upon with certain business concerns. This means of transport is doubtless destined in a short time to attain a very considerable development, as the construction of railways is a very lengthy affair.

As is well known, petroleum is the greatest national product of Persia and its exploitation in the South is daily increasing. In the North the wells at Baku are close at hand and Persia herself possesses along the whole of the Caspian Sea coast, very rich petroleum-bearing territory which has hitherto not been exploited. There will, therefore, be no lack of fuel.

III.

MARITIME NAVIGATION.

Navigation and the right to a flag are free in the Persian Gulf, the Shat-el-Arab, the River Karun and the Caspian Sea. (The rights of Persia in respect of the Caspian Sea are derived from the new Commercial Treaty with Russia).

(a) Navigation on the Caspian Sea is carried on principally by Russian vessels whose ports of register are Astrakan and Baku. Enzeli is the most

important port in the North of Persia; it was constructed so as to allow vessels to lie alongside the quay. It serves the regions of *Gilan, Teheran and Central Persia*.

General traffic of the ports of the Caspian Sea (in tons imported and exported) before the War, after the War, and at the present time.

Names of Ports: Astara, Talesh, Enzeli, Hassan-Kiadeh, Lengarud, Rudderess Tunekabum, Farahabad, Farikenar, Mashedisser, Bender-Ghez.

	Year	1913-14	Year	1918-19	Year	1919-20
	Number	Tonnage	Number	Tonnage	Number	Tonnage
Steamships	1,900	780,000	1,393	737,361	1,300	750,000
Sailing-vessels..	1,750	24,000	5,066	62,877	1,900	55,000
Total :	3,650	804,000	5,459	800,238	3,200	805,000

(b) *The ports of the Persian Gulf* are visited chiefly by British vessels. Bushire is the most important port; it possesses two anchorages, one on the exterior road (white light) five miles from the town, and the other inside the port (red light) two and a half miles from the Customs House. This latter roadstead is separated from the Bay of Bushire by a bar which is only accessible to vessels with a draught less than 7 feet. But the bay itself is very deep. All sailing-vessels which wish to pass the bar, load and unload there. The canal mentioned above, which separates the two roadsteads, is provided with two floating lights, one white and one red. This canal can be traversed by any steamer with a draught not exceeding 18 feet. In recent years, to avoid the delays resulting from the ebb and flow of the tide, the majority of steamers discharge their cargoes in the outer roadstead. The port of Bushire possesses about 400 sailing-vessels, and this number is increasing every year. For this reason coastal traffic between the large and small Persian ports on the Persian Gulf has attained considerable importance. This traffic is about equal to that between Bushire and Shiraz.

Mohammarah, on the Shat-el-Arab, is accessible to sea-going vessels, and possesses a calm and safe roadstead.

Before the war, the ports of the Persian Gulf were regularly served by English, Russian and German steamships. The English vessels plied between British ports, Antwerp or Marseilles, India and the Persian Gulf. The Russian steamships connected Odessa with the Persian ports. The German vessels connected Hamburg and Antwerp with the same points of the Gulf. During the war these shipping services were disorganised, and up to the present they have not been resumed.

General Traffic of Ports on the Persian Gulf (In tons imported and exported before war, after the war, and at present).

Names of Ports: Bushire, Lingah, Bender-Abbass, Charbar, Jask, Mohammarah, Abadan.

	Year	1913-14	Year	1918-19	Year	1919-20
	Number	Tonnage	Number	Tonnage	Number	Tonnage
Steamships...	1,200	1,900,000	1,020	2,027,962	650	1,400,000
Sailing-vessels.	2,800	90,000	7,720	260,824	4,890	165,000
Total:	4,000	1,990,000	8,740	2,288,786	5,540	1,565,000

(c) Maritime Steam Navigation Service for the Persian ports of the Caspian Sea and Persian Gulf.

Caspian Sea.

(1) "Caucasus and Mercury Company" and "Vostotchnoe Obchstvo".

This company provides for regular communication both ways, during part of the year, between Baku-Astara-Enzeli; between Baku-Bender-Ghez-Mashedisser; between Baku-Enzeli-Mashedisser-Bender-Ghez.

(a) *Baku-Enzeli Line* direct service in 20 hours. The prices for the conveyance of passengers and goods have considerably increased; at the end of 1918 to 1919 they were:

<i>Enzeli to Baku</i>	<i>Baku-Enzeli</i>
1st class passengers 150 kr.	375 roubles
2nd class passengers 120 kr.	250 roubles
3rd class passengers 35 kr.	100 roubles
Goods, 15 krans per pood.	

(b) *Astrakan-Mashedisser Line.*

This service has been completely suspended since Astrakan and the Volga region have been in the hands of the Bolsheviks.

(c) *Baku-Krasnovodsk Line.*

This service is disorganised as the result of military necessities and has been carried on irregularly during almost the whole of the year 1918-1919.

(d) *Baku-Mashedisser Line.*

For the same reasons as those mentioned above, the vessels which serve this line no longer call at Krasnovodsk; on the other hand, they call at Hassan Guli, at Gumuche-Tape and sometimes at Khaje Nefez.

(e) *Baku-Bender Ghez via Astara-Enzeli-Mashedisser Line.*

A regular weekly service, which has been periodically suspended as a result of the movements of the Bolsheviks, was established between these localities in the last months of 1918 to 1919.

(2) Various companies.

Apart from the regular maritime steam navigation services indicated above, there are on the Caspian a large number of irregular services which it is not possible to indicate clearly in the list, but the most important are the following shipping lines : Alioff Brothers, Gani Memedeff, Baba Ghelieff and the "Samalioud", "Rousse" and "Russo-Caucase" Companies.

Persian Gulf.

Up to the outbreak of the European War in 1914, the steamships of the various lines indicated below provided regular services for the principal ports of the Persian Gulf. These lines had agencies established in all these ports.

British Navigation Lines.

1. British India Steam Navigation Co. Ltd.
India-Persian Gulf.
2. Strick Line Ltd.
British Isles—Marseilles—Persian Gulf.
3. Bicknall-Ellerman Line.
British Isles—Persian Gulf.
4. The Hall Line Ltd.
British Isles—Antwerp—Persian Gulf.
4. Flower Motor Ship Co. Ltd.
British Isles—Persian Gulf.
6. Bombay Persia Steam Navigation Co. Ltd.
India—Persian Gulf.
7. Arab Steamers Ltd.
India—Persian Gulf.
8. Persian Gulf Steam Navigation Co. Ltd.
India—Persian Gulf.

Russian Navigation Line

Compagnie Russe de Navigation et de Commerce.
Odessa—Persian Gulf.

German Navigation Line.

Hamburg-America Line.
Hamburg—Antwerp—Persian Gulf.

The only maritime steam navigation services which served the Persian ports of the Persian Gulf during the financial year 1918 and 1919 are the following :

(1) British India Steam Navigation Co. Ltd.

(Weekly service Bombay-Basrah).

The quantity of goods transported by the steamers of this company is limited. But from time to time a special boat calls at the Persian ports in order to expedite the transport of goods destined for the Gulf which have accumulated at Bombay or at Karachi. The freight rates have risen by 40 rs. per cubic ton at 120 rupees. Small steamers belonging to the British India Company call, both going and returning, at Muscat, Henjam, Bushire, Mohammera and Basra. At Henjam these small steamers connect with Bender-Abbas and Lingah by means of the coastguard customs vessels "Gilan" and "Mazanderan", only as regards the transport of mails, passengers and their luggage, pearls, and consignments of specie.

(2) Bombay and Persia Steam Navigation. (Irregular service.)

(3) Arab Steamers Ltd. (Irregular service.)

(4) Persian Gulf Steam Navigation Co. Ltd. (Irregular service.) A few boats called at the Persian ports of the Persian Gulf during the year 1918 to 1919.

(5) Arab Line Ltd. (Irregular service.) A few boats visited the ports of the Persian Gulf during the year 1918 to 1919. This line at present only possesses two steamers. During the above-mentioned financial year, this company chartered Japanese vessels of the Mitsui Kaisha Company.

A small number of other vessels chartered in India by private individuals also called at ports of the Persian Gulf during the year 1918 to 1919.

(6) The Mesopotamia Persia Corporation Ltd. (ex Lynch Brothers). Regular service by launches running twice a day, Sunday excepted, for passengers between Mohammerah and Bassora and vice versa.

IV.

WATERWAY NAVIGATION.

Persia cannot, in general, make use of her river waterways for purposes of communication and transport, as they are not navigable, with the exception of the great river Karun (which is now navigable on 200 km. of its length), and the Shat-el-Arab. The section of the river Karun between the port of Shelylieh, six miles below Shuster, and the rapids of Ahvaz, is called the Upper Karun ; and the section between Nassery, south of the rapids, and Mohammerrah, is called the Lower Karun. On a length of 180 km., this latter part is at least 4 feet deep at all seasons of the year. If damming works were carried out on this river, vessels of 500 tons could ascend as far as Shuster.

The navigation dues per ton on the Karun are as follows :—

- (a) Steamships 1 kran.
- (b) Sailing vessels. $\frac{1}{2}$ kran.
- (c) Ships in ballast Half rates.
- (d) Persian sailing vessels of less than 30 tons are exempted from payment of dues.

As regards the other rivers, transport by vessels of very small tonnage is possible for a short distance only on the Gorgan and Atrek (Turcomania), the Babel (Manzenderan), the Sefid-rund, the Rudbar, the Tchemkhaleh and the Khumamrud (Gilan).

Persia is a riparian State of the Shat-el-Arab from the Persian Gulf as far as Mohammera. The Shat-el-Arab is a watercourse for long-distance traffic ; it bears the same name upstream from the Persian frontier as far as the confluence of the Tigris and the Euphrates, and has no source of its own. Neither the Tigris nor the Euphrates is a main stream or a tributary of the other; they are both tributaries of the Shat-el-Arab, which, in Persian territory, receives the water of another river, the Karun, which is navigable from the sea. The Karun is a national river, opened by Persia in 1888 to the commerce of all nations. A large part of the goods from abroad proceed via the Tigris, over a length of 820 km., to the Persian markets, passing through Baghdad ; at present they are carried by Persian sailing vessels.

Traffic of the Harbours of the Karun (in tons imported and exported) before the war, after the war, and at present.) — Names of Ports : Nasserî (Ahwaz), Shuster.

Year 1913-14 Year 1918-19 Year 1919-20

	Number	Tonnage	Number	Tonnage	Number	Tonnage
Steamships....	240	27,000	262	17,630	200	18,000
Sailing vessels.	415	4,000	796	15,438	300	6,000
Total :	655	31,000	1,058	33,068	500	24,000

V.—COMPARATIVE TABLE OF PERSIAN TRADE WITH THE PRINCIPAL IMPORTING AND EXPORTING COUNTRIES

		Imports	Exports	Total	
Year 1913-14	(1)	647,164,841	455,839,635	1,103,004,476	kr.
Year 1914-15	(2)	499,322,910	396,057,863	895,380,773	kr.
Year 1915-16	(3)	464,107,965	377,134,614	841,242,579	kr.
Year 1916-17	(4)	494,771,017	433,895,346	928,666,363	kr.
Year 1917-18	(5)	468,065,910	338,714,389	806,780,299	kr.
Year 1918-19	(6)	476,286,793	270,868,943	747,155,736	kr.

Average value of the kran :

(1) Frs. 0.45 — (2) Frs. 0.40 — (3) Frs. 0.44 — (4) Frs 0.77 — (5) Frs. 0.89 — (6) Frs. 0.91.

POLAND.

I.

RAILWAYS.

The situation of the railways in Poland is exceptionally serious. In the whole territory of former Russian Poland, the length of the railways, compared with the area of the country, was far from meeting economic needs. During the war the whole system was several times destroyed. The same is true of the railways in former Austrian Poland, and the last Bolshevik invasion has resulted in dilapidations which, in the majority of cases, it has not yet been possible to repair. The principal effort of the Polish Railway Administration has been centred on the reconstruction of the stations, which were almost everywhere destroyed, and on relaying the tracks. The following example shows the extent of the destruction: The Warsaw-Grodno-Vilna line, one of the principal lines in the country, can at present only be partially used because the large bridge of the valley of the Niemen, near Grodno, was twice destroyed, and it has not yet been possible to repair it.

At the present moment certain lines are still of only relative importance, because the Russian Government, for reasons of a strategic nature, was always opposed to joining up its system with the German and Austrian systems; so that with few exceptions, the lines in former Russian Poland stopped 10 or more km. from the old frontier. The Railway Administration is at present engaged in connecting the various sections of its system. There is still about 700 km. of broad-gauge Russian track, all of which will be converted into standard gauge in the near future.

The shortage of rolling stock cannot be exaggerated. The lines of former Russian Poland, which were always insufficiently equipped, were left entirely without rolling stock. All the rolling stock which Poland has at present, consists of the locomotives and wagons which could not be withdrawn from the Polish territory at the end of the war by the occupying administrations. This stock is very limited. It is dissimilar in character and of inferior quality, because the Polish theatre of operations, towards the end of the war, was only of secondary concern to the Central Empires.

The manufacture of locomotives and wagons is still impossible, because before 1914 all the rolling stock on the railway systems in the three sections of Poland were supplied by factories outside Polish territory. For the same reason it is very difficult to repair damaged stock and the material for this purpose is quite inadequate.

Under the Treaties of Versailles and St. Germain, Poland is entitled to a specified share in the distribution of German and Austrian rolling stock. Unfortunately it has not been possible to complete this distribution up to the present ; this regrettable delay has already caused considerable difficulties to the Polish Government, and in the interests of the normal operation of the railways, the distribution should be completed in the shortest possible period.

The purchase of rolling stock from abroad has only been possible in very small quantities owing to the present condition of the Polish exchange.

The shortage of coal has a considerable effect on the operation of the Polish railways. Before the war a large part of the coal used was imported from Upper Silesia. In spite of the favourable decisions of the Inter-Allied Coal-Distribution Commission, up to the present unjustifiable difficulties have been put in the way of Germany's delivery of Upper-Silesian coal.

STATEMENT ON THE SITUATION IN POLAND.

Length of track operated by the Polish State Railways and the condition of the Rolling-stock.

Railway Directorates	Normal gauge; single track.	Double track.	Total	Narrow gauge; single track
Warsaw Km.	379	728	1,107	1,176
Radom "	1,353	559	1,912	458
Cracow "	1,076	333	1,409	13
Lemberg "	1,267	520	1,787	71
Stanislawow "	1,161	—	1,161	—
Posen "	1,552	784	2,336	454
Vilna "	1,654	2,511	4,165	410
Danzig "	1,160	646	1,806	No data
Free City of Danzig "	88	58	146	available
Kilometres	9,690	6,139	15,829	2,582

About 700 kms. of (Russian) broad gauge will shortly be converted to normal gauge.

Rolling-stock	Normal gauge	Narrow gauge	Percentage of stock damaged	Russian type
Locomotives	3,855	325	47.73 %	225
Passenger coaches, luggage and postal vans, etc.	8,560	426	24.15 %	458
Goods trucks	69,263	4,911	8.51 %	8,730

Traffic in the first half of 1920.

		First quarter	Second quarter
		Warsaw, Radom, Cracow, Lemberg, Stanislawow, Vilna Railway	Warsaw, Radom, Cracow, Lemberg, Stanislawow, Posen, Vilna and Volhynie.
Train	{ passengers	3,553,814 km.	5,088,855 km.
Kilometrage	{ goods	4,566,533 km.	5,873,762 km.
Axle-	{ passengers	100,207,659	145,248,808
Kilometrage	{ goods	339,408,444	458,272,686
Gross tonnage	{ passengers	791,524 thousand km. tons.	1,152,131 thousand km. tons.
Kilometrage	{ goods	2,010,942	2,926,800
Locomotive	{ with trains	8,741,230	11,601,136
Kilometrage	{ without trains	3,816,157	4,376,668

Receipts

	Tickets sold. (Number)	Luggage and parcels	Parcels by slow and fast train
Warsaw	27,687,127	91,483	8,418,221
Radom	5,721,869	12,371	2,609,574
Cracow	17,405,112	18,490	4,811,810
Lemberg	8,693,123	19,882	4,948,702
Stanislawow	3,219,998	4,212	923,723
	62,727,229	146,438	21,712,030

	Receipts tickets	Receipts luggage	Receipts parcels	Receipts miscellaneous
Warsaw	588,131,581	60,096,484	780,171,054	84,495,309
Radom	110,112,268	6,130,130	53,571,240	1,918,000
Cracow	274,984,150	14,707,890	367,208,830	
Lemberg	182,523,542	15,190,368	598,260,936	
Stanislawow ...	54,431,163	3,104,756	85,035,053	
	1,210,182,704	99,229,628	1,884,247,104	86,413,309

Grand total: 3,260,072,744 Polish marks.

Fuel.

Total consumption of fuel of every kind :

Coal, 300,000 tons per month.

Wood, 140,000 cubic metres per month.

Origin: Dombrowa Basin, Cracow, Karvin and Upper Silesia. The prices are fixed by the Economic Committee of the Council of Ministers.

II.

RIVER NAVIGATION.

Condition of Ports.—There are no commercial ports in the strict sense of the term, on the navigable rivers of Poland.

The halts on the Vistula—Cracow, Posternik, Sardemir, Warsaw, Modlin, Plock, Torun (Thorn) Grudziadz (Grendens), Tczew serve chiefly for the requirements of the river administration, and offer small facilities for unloading. The only places connected by rail with neighbouring railway stations are the halt at Cracow, the port of Naddrezie and the provisional station at Fort Sliwicki at Praga. There are also a number of halts for timber-rafts on the Augustow canal.

Condition of the Waterways.

Navigable Rivers.—The channel of the Vistula has been regularised, to some extent, from the mouth of the Przemska as far as Zawichost, and from the former Russian-Prussian frontier as far as its mouth. In the rest of its course, the channel has not been regularized and is only navigable with difficulty. Among the navigable tributaries of the Vistula, the Dunajec, the Visloka and the San have been partially improved; the Bug, Wieprz, Pilica and the Narew have not been improved; the Bug and the Narew are the only tributaries on which navigation is at present carried out. The Dniester has been partly regularised, but navigation—which was negligible before the War—has now ceased entirely owing to lack of material. In the former Prussian-Poland, in addition to the Vistula, the following waterways are navigable and have been regularised: the Warta, Glda, Notec, Obra, Wierzyca and also the tributaries of the Vistula, the Broda, the Czarna, Woda, Drweca and the Przemska, the Bronislowski Canal, from the Notec towards Bronislawow, the canal from Brda to the Notec, and the Foliszow waterway. In the centre and the East of Poland there are the canals of Augustowski, Krolewski and Oginski (destroyed during the war and practically non-existent.)

Work to be Carried Out.

1. The regularisation of the Vistula throughout its course.
2. Reconstruction of the Augustowski Canal and repairs to the Krolewski Canal.
3. The Port of Warsaw, now under construction, which will include 7,500 metres of wharves and basins, and will have a loading capacity of 1,500,000 tons, will have to be connected with the Brest Railway, after the channel of the Vistula has been improved, so as to make this port

accessible. The construction of the first 1,000 metres of wharf should be completed during the course of the year.

The construction of commercial ports at Cracow, Plock, Wloclawek, and Tczew is under consideration. A canal for barges of 600 tons is being constructed between the Dombrowa basin and Cracow. The construction of the circular canal at Warsaw has also been commenced. The extension of the Dombrowa-Cracow Canal (along the right bank of the Vistula as far as the mouth of the San) is being considered. Plans are being made for a canal from Dombrowa via Warsaw to Wiala or Thorn, to afford communication with Danzig. A scheme for a canal connecting the Warta at Konin with the Brda-Notec canal by Lake Goplo will be considered in the near future.

Material.

Until this year, navigation had been entirely in the hands of the State. The Polish Directorate of Navigation possesses :

- 5 passenger vessels of 800 h. p., taking 5,000 passengers in all.
- 6 passenger vessels of 565 h. p., taking 5,000 passengers in all.
- 9 first-class tugs of 2,145 h. p.
- 8 second-class tugs of 1,000 h. p.
- 7 3rd-class tugs of 395 p. h.
- 1 cargo-boat of 100 h. p.
- 2 terry-boats of 120 h. p.

The Directorate for the improvement of Navigable Waterways possesses 9 vessels of 366 h. p.

The Ministry of War possesses 10 vessels of 492 h. p.

Speaking generally, the condition of these vessels and their tonnage leaves much to be desired, and they are in no way adequate for the needs of the country. Little can be done to improve the situation by private enterprise, since the latter will be chiefly dependent on the vessels mentioned above, of which one-third will be handed over by the State.

Traffic.

During the financial year 1919-1920, navigation on the Vistula was carried on with three objects :

1. Transport of passengers and goods between Warsaw and Plock or Wloclawek and between Warsaw and Sandomir ;
2. Towage of skiffs, barges and lighters, between Warsaw and Danzig, and Warsaw and Sandomir ;
3. Transport of coal in small quantities by barges and lighters on the Upper Vistula.

Passenger traffic has been interrupted on the Narew between Poltusk and Zegrze. On the other hand transport of goods and timber has been

carried on, according to requirements and to the means available, on the Bug and the Narew.

The Bydgoszez (Bromberg) Canal, which is destined to connect the Vistula and the Oder, and also the rivers Notec and Węta were occupied by the Polish authorities in January 1920 for political reasons, and navigation on them was restricted.

On the rivers Narew, Biobrza, Bug and on the Augustowski Canal there was very little navigation, even before the war. These waterways are indeed of negligible value for transportation purposes, as the locks on the canal are of an obsolete type and the rivers are not regularised.

Transport of Passengers and Goods.

	1919	1920
Passengers	472,021	361,581
Luggage	4,088,492 kg.	1,658,510 kg.
Goods by boat	6,741 tons	
Goods by barge	152,766 tons	282,862 tons
	<hr/> 30,000,000 km. tons	<hr/> 40,000,000 km. tons

Freights.—As a result of the economic condition of the country :

In April, 1920	increase of 25 %
In June	» 50 %
In September	» 50 %

Fuel.—Requirements of the State navigation service :

Coal, about 60,000,000 tons
Oil, about 25,000 tons

besides 6,000 tons of coal and 5,000 tons of oil for the remainder of the fleet.

PORTUGAL.

I.

RAILWAYS.

1921.

Name of Lines	Length in kilometres	Receipts in crowns.
Portuguese Railway Company	1,146	27,432,388 (L)
Beira Alta Railway Company	253	2,292,414 (L)
Sté de Estoril (Lisbon-Cascais)	26	1,164,269 (L)
State Railways	1,265	8,719,943 (L) (1)
National Railway Company	185	582,578 (E)
Oporto to Povoia & Fanalicao Rail- way Company	64	632,325 (E)
Guimaraes Railway Company	56	437,190 (E)
Vouga Valley Railway Company	176	711,481 (E)
Total	3,171	41,972,588

(E) Narrow gauge.

(L) Broad gauge.

(1) Including 137 kilometres of narrow-gauge line.

The condition of the lines is satisfactory and there is little urgent repair work needing to be done.

The construction of the secondary lines which had been planned is continuing. These lines will facilitate the improvement of the economic condition of the country.

The double track between Lisbon and Oporto (via Santarem) is almost completed, and work is about to be begun on the scheme for electrifying the Lisbon-Estoril-Cascais line, which is also double track.

The rolling-stock is not in good condition. There are a great number of engines, coaches, and waggons under repair. This position is due to the war, which has led to a shortage of material and a decrease in the amount of labour available (by reason of the adoption of the 8-hour day).

The international services running are the following :

Lisbon-Paris with a connection for the Pyrenees (via Vilar Formosa) :

1	slow train a day	In each direction.
1	express 3 times a week	» »
1	luxury express (Sud-express) 3 times a week	» »

Lisbon-Madrid-Barcelona-Marseilles-Nice (via Marvao) :

1	mail train a day	In each direction.
1	express train a day	» »
1	express train with dining car 3 times a week	» »

Lisbon-Oporto-Galicia (via Valença) :

1	slow mail train (direct) a day	In each direction.
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Oporto-Madrid-Paris (via Barca d'Alva) :

1	mail train a day	In each direction.
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The number of trains on the internal services is almost as great as before the war.

The rise in passenger and goods rates owing to the war is about 400 %.

The fuel in use is English coal, the stocks of which are sufficient for from 3 to 4 months.

The present (1921) price is from 90/100 crowns a ton.

The financial position of the companies is not good. The receipts are insufficient to meet the excessive price of materials and of fuel, caused by the condition of the exchange and the increase of salaries.

II.

SEA AND WATERWAY NAVIGATION.

The ports of Lisbon and Leixoes (Oporto), which are available for ships of large tonnage are the most important in the country. They are in good condition, but improvements are at present being carried out by the construction of mooring wharves, of new docks and of high-power cranes.

Improvements are shortly also to be carried out in the other ports.

The traffic of the port of Lisbon in 1920 was the following :

Ships entering the port	3,226	(gross tonnage 6,696,797)
Ships moored to the wharves	1,690	(" " 2,127,796)
Passengers in transit	141,637	

Goods (1919) :

Loaded	1,142,488 tons
Unloaded	498,484 tons

Postal traffic :

Loaded	12,098 tons
Unloaded	34,126 tons

Traffic of the Port of Leixoes and of the River Douro :

Ships 1,256 (liquid tons : 1,233,839).

The total traffic of the ports of the whole country in 1919 was as follows :

Goods loaded	1,664,312
Goods unloaded	843,480
Passengers embarked	46,576
Passengers disembarked	28,906

The waterways, which should be specially mentioned because of the great facilities they offer for navigation, are the Tagus, the Douro, and the Guadiana. The last is navigable for ocean-going ships as far as Pomarao and for small steamers up to Mertola. The other rivers are barely navigable.

The river traffic in 1920, leaving out the Guadiana, was as follows :

Ships. 1,493 (8,939 tons)

Condition of the Merchant Marine.

The Merchant Marine is at present composed of :

86 sailing ships exceeding 100 tons	28,782 tons
116 steamships (60 of which are over 1,000 tons)	246,417 tons
Total.	275,199 tons

The steamship services are carried on by the following companies :

Empresa Insulana :

Lines to the Azores and Madeira.

Companhia Nacional de Navegacao :

Lines to the East and West African Ports.

Transportes Maritimos de Estado :

Lines to East and West African Ports and to Ports in Northern Europe and South America.

The rise of the passenger and goods rates, compared to 1914, is 1,000 %.

The fuel used is Cardiff coal, the present price of which (owing to the exchange), varies from 90 to 100 crowns per ton.

The shipping companies are at present passing through a serious crisis, and are obliged to suspend certain services.

III.

ROADS.

The ordinary road system in Portugal includes four classes of roads : national roads, district roads, " service " roads, and municipal roads.

National roads are those which connect the capital of the districts with each other, with seaports or with the frontier, and they are regarded as being of " public interest ".

District roads are intended to establish communication between cities or towns and other important centres of production and consumption, thus completing, so to speak, the system of national roads.

The category of " service " roads comprises those which give access to railway stations, to roads of other categories and to places of small importance.

The State undertakes the planning, construction, maintenance, policing and repair of the first three classes of roads, and the municipal councils undertake the same duties in respect of municipal roads.

When the construction of all the State roads provided for in the scheme annexed to the decree of February 21st, 1889, has been completed, the total length of roads will be nearly 20,000 kilometres, but on June 30th of this year there were hardly more than 13,000 kilometres completed.

On that date the length of the roads either completed, under construction, or projected was as follows :—

Classes	Con- structed.	Under construc- tion.	Plans com- pleted.	Plans not com- pleted.	Total.
National Roads.....	6,460	124	1,120	512	8,216
District Roads	5,804	325	2,971	1,717	10,817
Non-classified Roads....	1,134	250	1,008	619	3,011
Total...	13,398	699	5,099	2,648	22,044

The municipal roads are only of local interest, but this does not lessen their importance from the point of view of the facilities they provide for the transport of produce from agricultural and industrial centres to the main consuming centres and for the acquisition, under favourable conditions, of the manure and raw materials lacking in those centres.

The development of roads of this class has always been delayed through lack of assistance on the part of the municipal authorities and the small attention that has generally been given to this question.

The Portuguese Colonies.

RAILWAYS.

The railways in the Portuguese Colonies especially intended for transit traffic are the following:

Line from Lorenzo Marques (Delagoa Bay) to the Transvaal Frontier.—The terminus of the railway is the port of Lorenzo Marques, upon which the Portuguese Government has spent more than £ 3,000,000 and which has been equipped with quays for mooring ships, stores, depots, cranes (the most powerful of which is able to unload weights of 80 tons) and with all modern appliances. Transit traffic is carried on with the Transvaal and Swaziland.

Line from Beira to Rhodesia.—The terminus of this line is the port of Beira, which can easily take ships drawing as much as 30 feet.

The entrance to the port is well buoyed and lighted and the port is equipped with quays at which barges can be moored. Transit traffic is carried on with Eastern Rhodesia, Northern Rhodesia and the Belgian Congo.

Line from Lobita to the Congo Frontier.—This line was begun to meet the requirements of transit traffic with Katanga. Its terminus is the port of Lobita, one of the best in West Africa, which already possesses a quay providing mooring accommodation for vessels drawing 35 feet. This line, for the construction of which the concession was granted to Robert Williams, ought to have been already completed according to the terms of the contract, but circumstances over which the Portuguese Government had no control have delayed its completion.

The line from Lobita which is to connect the port of Lobita with Beira and Lorenzo Marques, in West Africa, will be of great importance in the future because it will constitute the shortest route between the East and Eastern America.

Mormugao Line (India).—The Mormugao railway connects at the frontier with the Indian system of the Southern Maharatta Railway;

the guaranteed interest upon the capital of £ 1,350,000 enjoyed by this line has always been a very heavy charge upon the finances of Portuguese India.

Works have been and are still being carried out in the port of Mormugao. Access to the port is easy and the port possesses the necessary equipment for traffic requirements.

* * *

Other railways have been begun, especially for transit purposes, such as the line from Quelimane to Chire and the line from Mozambique to the Lakes. Unfortunately, owing to the war, construction was suspended and it has not yet been possible to resume it as actively as would be desirable.

A gauge of 1 m. 067, which is the same as that of the South African railways, has been adopted everywhere upon these lines, with the exception of the line from Loanda to Malange which has a gauge of 1 metre, the reason being that this line was begun in 1885, that is to say at a time when railways had hardly begun to be constructed in Africa, and consequently the normal gauge had not yet been fixed.

On railways of local importance varying gauges have been adopted in agreement with the commercial interests concerned.

A table of the railways existing in the Portuguese Colonies follows.

Railways in the Portuguese Colonies.

I. Mozambique.

Line from Lorenzo Marques to the Transvaal :

Total length (with the Polana branch lines) . . .	94,5 kilometres
Gauge	1 m. 067
Gross receipts in 1914	1.196.627 \$ 36
Ratio between expenditure and receipts	0,752

Line from Swaziland (under construction) :

Length constructed	81 kilometres
Gauge	1,067
Gross receipts in 1914	15.316 \$ 71
Ratio between expenditure and receipts	2.821

Line from Chai-Chai to Manjacaze :

Length constructed	52 kilometres
Gauge	0,75
Gross receipts in 1914	33.254 \$ 31
Ratio between expenditure and receipts	0,821

Line from Moamba to Kinavane :

Length constructed	89 kilometres
Gauge	1 m. 067
Gross receipts in 1915	20,797 \$ 40
Ratio between expenditure and receipts	2,602

Line from Inhambane to Inharrime :

Total length.	92 kilometres
Gauge	1 m. 067
Gross receipts in 1914	30,709 \$ 09
Ratio between expenditure and revenue	1,311

Line from Mozambique to the frontier (in course of construction).

Length constructed	38 kilometres
Gauge	1 m. 067

Line from Quelimane to the Maquival :

Total length	28 kilometres
Gauge	0 m. 60
Gross receipts in 1914	\$ 16,848,40
Ratio between expenditure and revenue	0,636

Line from Beira to the frontier (Menini) :

Total length	339 kilometres
Gauge	1 m. 067
Gross receipts in 1914	\$ 1,780,739,05

*Line from Beira to the Zambesi (in course of construction).**Line from the Zambesi to the frontier (in course of construction).*

These three latter lines are in the territory administered by the Mozambique Company.

Villa Durao Line.—This line, the construction of which had been previously commenced, was closed during the war. It starts from the left bank of the River Maquival and follows the direction of the peaks of Namule.

Line from Lorenzo Marques to Marracuene.—This narrow-gauge line serves the neighbourhood of Lorenzo Marques and connects this town with the district of the Marracuene on the River Incomatic.

II. Angola.*Lines from Mossamedes to Humbe (in course of construction) :*

Length constructed	186 kilometres
Gauge	0,60
Gross receipts in 1914	88.836,97
Ratio between expenditure and revenue	0,539

Line from Lucala to Malange :

Total length	140 kilometres
Gauge	1 m.
Gross receipts in 1914	40.334,84
Ratio between expenditure and revenue	1,241

Line from Loanda to Lucala :

Total length	364 kilometres
Gauge	1 m.
Gross receipts in 1914.	345.726,09
Ratio between expenditure and revenue	0,804

Line from Lobito to the frontier (in course of construction) :

Length constructed	519 kilometres
Length in course of construction.	107 kilometres
Length to be constructed	667 kilometres
Gauge	1,067 m.
Gross receipts in 1914	381.812,14
Ratio between expenditure and revenue	0,793

III. San Thome and Principe.*Fruidada Line¹ (in course of construction) :*

Length of line already constructed	15.4 kilometres
Gauge	0,75 m.
Gross receipts in 1914	17.304,99
Ratio between expenditure and revenue	1,57

¹ In addition to the Fruidada line, the plantations are served by narrow-gauge lines of a width between 0,50 and 0,75, of which 250 kilometres are being worked.

IV. **India** (Goa).*Line from Goa to the frontier :*

Total length	87 kilometres
Gauge	1 m.
Gross receipts in 1914	\$ 258.265,65
Ratio between expenditure and revenue	0,558

Railways	Cost of construction	Per kilometre	Length of line in kilometres		Gauge in metres	No. of stations
			in working	in course of construct.		
<i>Worked by the State</i>						
From Lorenzo Marques to the frontier	—	—	89	—	1,067	10
From Mossamedes to the Lubango ..	2,236,185.36	12,705.59	183	3	0,60	15
From Lucala to Malange	2,665,861.27	19,041.67	140	—	1,0	6
From Lorenzo Marques to Swaziland	1,862,212.46	25,165.03	74	—	1,067	8
From Cha-chai to Manjacaze	272,992.24	5,249.85	52	—	0,7	5
From Moamba to Xinavane	800,599.50	8,995.50	89	—	1,067	6
From Lorenzo Marques to Polana...	—	—	5,5	—	1,067	2
From Inhambane to Inharrime	—	—	89	25	1,067	9
From San Tomé	458,588.17	29,784.94	14	5,131	1,067	6
Total...			735,5	33,131	0,75	67
<i>Worked by private companies</i>						
From Mormugao to the frontier	—	—	82	—	1,0	14
From Loanda to Lucala	12,459,842.85	34,228.96	364	—	1,0	30
From Beira to Menini	—	—	339	—	1,067	18
From Lobito to the frontier	21,827,323.31	42,056.49	519	107	1,067	25
From Quelimane to the Maquival ...	167,052.09	6,065.36	28	—	0,60	6
Total...	—	—	1,332	107	—	93
General Total...	—	—	2,067,5	140,131	—	160
			2,953,355			

In addition to these railways lines already working, the following lines are in course of construction :

Quelimane to the frontier . . .	}	Colony of Mozambique
Beira to the Zambesi		
Zambesi to the frontier		
Maquival to Villa Durao		
Mozambique to the frontier .		

and the construction of the following lines is being considered :

Malange to the frontier	}	Angola
Bengueda Veiha to Amboim		

ROUMANIA.

I.

RAILWAYS.

The Roumanian State, recognising the importance of railways for its development, has made great sacrifices in order to re-purchase concessionary lines and to construct new lines.

Up till the end for 1914, at the beginning of the world-war, Roumania had expended on railways 1,200 million gold leis—a very considerable sum for a small State with a population of seven millions with its industries still in their infancy.

A. THE OLD KINGDOM.

Situation before the War.

The railway system of the Old Kingdom was well constructed, with lines of normal gauge, steel bridges over the large rivers, such as the Danube (3,491 metres), the Olt (375 metres), the Arges (330 metres), and the Siret (254 metres), etc.; in short, the Roumanian railways had succeeded in developing their traffic up to the standard attained in the great countries of Central and Western Europe, as will be seen from the following figures, which show the average for the last five years (1909-10 1913-14).

Length of lines	3,437 km.
Number of stations	417
Number of halts	39
Gross receipts	103,910,651 lei.
Total expenditure.	66,664,937 »
Credit balance	37,245,714 »

Passengers :

Passengers carried	10,830,553
Passenger kilometres.	775,686,462
Average run	71.6 km.
Receipts	36,517,723 lei

Luggage :

Tons carried	21,779
Kilometric tons.	4,082,666
Average run	187 km.
Receipts	1,175,396 lei

Goods :

Goods carried by fast trains	89,438 tons
Goods carried by slow trains	8,396,249 tons
Kilometre-tons carried by fast trains	16,370,791
Kilometre-tons carried by slow trains.	335,837,913
Average run	Fast 183 Slow 159
Receipts	Fast 3,585,570 lei Slow 59,176,678 »

Tonnage of Incoming and Outgoing Goods at Roumanian Ports.

	Outgoing	Incoming
Constanza Port	68,509	159,279
Braila Docks	81,820	86,387
Braila Port	156,142	266,583
Galatz Port	—	84,771
Galatz Dock	29,132	1,211,800

Rolling Stock.

The system was operated with the following rolling stock, no reduction being made for engines under repair :

Locomotives	1,072
Passenger coaches	1,497
Mail and luggage vans	153
Goods trucks	23,736

Fuel.

The annual consumption of fuel was as follows :

Black coal, 86,484 tons, price 37 lei per ton.

Lignite, 220,204 tons, price 15 lei per ton

Wood, 235,510 cubic metres, price 9 lei per ton

Petroleum, 175,920 tons.

The total price of fuel amounted to 14,598,089 lei per year.

From the beginning of the world-war (August 1914) the receipts of the railways suffered heavy losses, which were chiefly due to the almost total cessation of traffic with Western Europe and with our ports of Galatz, Braila, and Constanza, and to the closing of the Dardanelles (which was the route used by the greater part of the Roumanian traffic), with the result that the net receipts for the year 1914 to 1915 fell from 37 to 20 millions.

After our entry into the war, our stations, bridges, workshops, and ports were damaged by bombardment from aeroplanes and Zeppelins.

Subsequently, during the retreat of our armies and of the Russians, a portion of these works was destroyed at the request of the General Staffs, among others the great bridge over the Borcea (3 spans of 140 m.).

During the invasion, the enemy armies destroyed bridges, stations, etc., without any reason.

Finally, during the occupation, which lasted more than two years, the enemy carried out demolitions and alterations with the sole object of using our products to their own advantage and of facilitating their military projects.

The supplies of materials at stations, workshops, and bridges were carried off and partly destroyed; the platforms, plant, and other structures were also destroyed, so that our country will for a long time to come be unable to make full use of its means of transport.

The action taken by the enemy in their retreat was still more disastrous for us, for they then destroyed not only engineering works, but also furniture, archives, and stations, besides carrying off waggons and locomotives.

The damage caused to movable and immovable property is known exactly; it was calculated from estimates made on the spot by competent persons taking inventories into account and having regard to the prices ruling in 1919, the earliest time at which the various materials, instruments, and machines stolen or destroyed could be replaced (pre-war values had increased three-fold).

The total of this damage was as follows :—

<i>Nature of Damage</i>	<i>Value</i>
1. Structures, station plant, furniture	96,745,188
2. Various electrical apparatus, instruments and materials	4,492,720
3. Track, embankments, bridges	38,107,903

4. Miscellaneous materials	143,656,453
5. Rolling-stock	475,021,970
6. Mechanical fittings of workshops and stores	23,742,407
7. Fuel	13,788,071
8. Cash removed by the Germans	1,228,040

Total gold lei	796,782,712
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Some of these works have been rebuilt provisionally because their final reconstruction (54 bridges in addition to the Borca bridge) requires very large expenditure, and could not be finished in less than three years.

Owing to the enormous and increasing prices (12-14 times pre-war figures) and to the high cost of labour, their reconstruction will require a sum at least four times greater than we claimed from the Reparations Commission (Peace Conference), i. e., at least 3-4 milliards.

As in their retreat the enemy removed and destroyed our rolling stock, when the Armistice was concluded the Old Kingdom had a very inadequate number of locomotives and wagons ; and of these many were almost unfit for use, viz :

Locomotives	641
Passenger coaches	1,141
Goods trucks	10,673

This number was all the more inadequate, since, as a result of the occupation of a part of the territory which was to be allotted to Roumania, the Roumanian railway system had been greatly extended.

At the time of the Armistice the Allied Armies had occupied a part of the territory which was subsequently allotted to Roumania. As no statistics regarding the captured rolling stock were drawn up, and as part of this material was removed by the Allied Armies when they left the occupied districts, we can give no figures for this period.

B. THE RAILWAY SYSTEM OF GREATER ROUMANIA.

The Present Situation.

The territory allotted to Roumania by the Peace Treaties of St. Germain, Trianon, etc., appreciably enlarged the Roumanian railway system (11,678 km., as will be seen from the table below).

TABLE
OF THE LINES OF THE ROUMANIAN RAILWAY SYSTEM.

Situating in	State Lines				Private Lines				Total Kms.	Stations	Cantons			
	Standard		Broad		Adm. by State	Private Adm.		By Com- panies						
	Single	Double	Single	Double										
						Narrow								
Old Kingdom.....	3,661	193	21	—	150	—	128	202	—	—	4,357	479	1,939	
Bessarabia	—	—	959	169	—	—	—	—	—	—	1,129	115	409	
Bukovina	193	—	—	—	28	—	414	22	—	—	659	165	111	
Transylvania	1,985	—	—	—	—	2,024	650	199	148	21	5,533	649	2,627	
Total...	5,839	193	980	169	178	2,024	650	1,048	423	148	21	11,678	1,048	5,086

All these lines, especially those of Bessarabia and of Bukovina, have suffered considerable damage as a result of the war, and will require extensive repairs for their complete restoration.

Rolling Stock.

On the other hand, the only rolling stock which is fit for use (see figures below) has become entirely inadequate to meet the requirements of the whole State railway system.

Serviceable locomotives	996
Serviceable passenger coaches	3,016
Serviceable goods trucks	47,007

These figures include the wagons which are in use. The total number of wagons in the possession of the State Railways is 84,000, including damaged wagons handed over to Roumania, as the Reparations Commission has not yet given its decision on the distribution of the material which belonged to the former Austro-Hungarian Monarchy.

From a comparison of these two tables, it will be seen that there are at present for every 100 km. of track :

Locomotives	8
Passenger coaches	26
Luggage and mail vans and goods trucks . .	402

Whereas before the war there were :

Locomotives	31
Passenger coaches	43
Luggage and mail vans	4
Goods trucks	690

Fuel.—The present consumption of fuel, the cost of which is approximately 470,000,000 lei, is as follows :—

Lignite, 197,465 tons, at 116-212 lei per ton. Black coal, 504,065 tons, at 356-426 lei per ton. Petroleum, 117,530 tons, at 500 lei per ton. Wood, 1,961,145 cubic metres, at 72-100 lei.

This consumption will be appreciably increased when normal traffic is restored.

Traffic.—The figures regarding traffic for the year 1918-1919 are as follows :—

Passengers carried	4,902,914
Gross receipts	36,952,656 lei
Luggage	12,654 tons
Gross receipts	3,434,935 lei

Goods carried (fast trains)	7,805 tons
(slow)	675,008 tons
Gross receipts (fast trains)	1,020,492 lei
(slow)	18,343,588 lei.

The figures for the year 1919-1920 have not yet been ascertained.

In comparing these with pre-war figures, the depreciation of the currency must be taken into account.

Financial Results.—The financial results can only be described as disastrous. They show a deficit of approximately 330 millions for the year 1919-1920, and of 186 millions for 8 months (1920-1921), whereas before the war they showed a profit of almost 40 millions a year.

Rates.—The pre-war rates have been gradually increased, as follows :

(1) Passengers :		
1st class	600	%
2nd class	500	%
3rd class	400	%
(2) Luggage	500	%
(3) Goods	500	%

In addition a supplementary rate of 5 % is levied for the relief fund, and 20 % as a bounty for workmen and employees, so that the uniform kilometric charge for 100 km. is as follows :

1st class	1,28
2nd class	0,75
3rd class	0,43
Luggage per 10 kg.	0,0375
Goods, by fast train per 100 kg.	0,33
Goods, by slow train,	
Amount below 5,000 kg.	0,154
per 100 kg. At least 5,000 kg.	0,104
At least 10,000 kg.	0,083
Cereals { per 100 kg.	0,055
Fuel {	0,0275

Measures undertaken to improve the Railways.

From the conclusion of the general Armistice up to the present, Roumania has made great efforts to improve her railways, in order to fit them for service both to the country itself and to international transit and communications.

With this object, she has expended for repairs of bridges, track buildings, and plant, the sum of 449,500,000 lei.

She has ordered in America 350 locomotives, for which she has opened a credit of	1,247,500,000 lei
In Germany 125 new locomotives and repairs to 450 locomotives, credit opened for	449,080,000 lei
In Czecho-Slovakia, 80 new locomotives, and repairs to 500 locomotives, 570 passenger coaches and 800 goods trucks. Credit opened for	638,000,000 lei
In Austria, repairs to 500 locomotives. Credit At Resitza (in the Banat) 60 locomotives a year for 10 years, and repairs to 180 per year. Credit . . .	210,000,000 lei
From the Société Française de Braila, repairs to 120 locomotives a year for 10 years	42,000,000 lei
From Lemaître, Société Belge (Bucharest), repairs to 120 locomotives per year for 10 years	48,000,000 lei
From Grivitza, Société Roumaine, repairs to 300 locomotives and 5,000 waggons for 10 years	48,000,000 lei
	620,000,000 lei
Total expenditure will be	3,752,080,000 lei

To be in a position to meet all these requirements and to complete the other works which are absolutely necessary, Roumania must have at her disposal a sum of at least 3 or 4 milliard paper lei, i. e., 300-400 million gold lei ; this we hope to obtain if the Barcelona Conference will support our claim to the Supreme Council to compel the enemy to reimburse us for part of the repairs demanded by Roumania.

International Passenger Traffic.

The Roumanian Delegation takes this opportunity of once more drawing the attention of the Conference to the question of international passenger traffic, which has been the subject of various Conferences, and to request that the through and express trains which existed before the war may again be run, giving Roumania through connections with Northern Europe, England, Belgium, Sweden, the Netherlands, Norway and Germany.

At present, owing to an unfortunate interpretation, Roumania has only a single through route, by the Simplon-Orient express, which serves a very small portion of the country, with the result that the distance between Roumania and the great capitals of the north is about 400 km. longer than it should normally be (Ostend-Bucharest 2,999 instead of 2,605 ; London-Bucharest 3,156 instead of 2,830 km., etc.).

The Roumanian Delegation ventures, therefore, to bring this question once again before the Conference, as was done at the Posts and Telegraph Conference and at the Conference on Passports and Through Tickets convened by the Provisional Committee on Transit and Communications, and to request that the through and express trains which leave Paris and Brussels and which now stop at Vienna may continue their journey with

the same waggons to Bucharest via Budapest. We would also ask that the trains from Berlin should continue their journey via Oderberg-Predeal to Bucharest, as was done before the war.

We again draw the attention of all whom it may concern to the fact that Roumania has not adhered to Article 2 of the Inter-Governmental Convention, by which the signatories of that Convention, establishing the Simplon-Orient Express) were forbidden to take part in running other express trains with through carriages.

Article 2 of the Draft Convention for an International Railway Regime, which is to be approved by this Conference, recognizes it as absolutely essential that railways should adopt the necessary measures to facilitate the international transportation of passengers and luggage with rapidity and comfort. For this purpose it recommends the introduction of services with through tickets, and, as far as possible, with through carriages.

Now, before the war, such trains were organized, as at present, by the Compagnie des Wagons-Lits; but their terminus was not Vienna; they went on to Bucharest and even beyond, as far as our great port of Constanza.

II.

RIVER NAVIGATION.

A. WATERWAYS AND RIVER PORTS.

Roumania possesses about 2,840 km. of navigable waterways, the most important being the main stream of the Danube, 1,075 km.; its minor branches, 395 km.; and its principal tributories, the Pruth, the Dniester, the Mures and the Bega Canal, 1,370 km.

On the main stream of the Danube there are 36 ports at distances varying from 20 to 80 km., the names of which are as follows: Bazias, Moldova, Drencova, Lubotina, Orsova, Varciorova, Turnu-Severin, Gruia, Cetatea, Calafat, Bistret, Bechet, Corabia, Turnu-Magurele, Zimnicea, Giurgiu, Oltenita, Turtucaia, Silistra, Calarasi, Ostrov, Oltina, Cernavoda, Harsova, Gura-Ialomitzei, Macin, Braila, Galatz, Reni, Isaccea, Tulcea, Sulina, Ismail, Chilia-noua, Chilia-veche, and Valcov.

Among these ports the most important are Galatz, Braila, Oltenitza, Giurgiu, Corabia, Calafat, Turnu-Severin, and Orsova.

For the construction and improvement of these ports Roumania spent, up to the beginning of the world war, about 120,000,000 lei.

These ports have been equipped with wharves, platforms, warehouses, landing stages, with gangway pontoons, railways, roads, winter docks and various mechanical installations to facilitate operations.

In the most-important ports, like Braila and Galatz, the Roumanian Government has expended large sums on building commercial docks,

including, besides other installations, docks with grain silos with a capacity of 25,000 tons.

Each of these docks, eight hectares in area, is directly connected with the Danube. On one side is a wharf 500 metres in length, other sides being formed by stone embankments from 1,200 to 1,400 metres in length, part of them provided with landing stages. Around each dock are nearly 20 hectares of platforms, on which are built about 10,000 square metres of transit and storage warehouses.

The corn warehouses, which are built of reinforced concrete, comprise silos in which 400,000 hectolitres of corn can be stored. Elevators and belt-transporters are used for storing grain. Special arrangements exist for loading boats from the silos.

The platforms are served by ten to eleven km. of railway, connecting with the principal lines from Galatz and Braila, as well as with those leading along the Danube to these ports.

In order to facilitate the handling of goods, the docks at Galatz are equipped with :

- 8 mobile cranes of 1,500 kg. each.
- 1 crane of 2,500 kg.
- 1 fixed crane of 10,000 kg.

And the docks at Braila with :

- 2 mobile cranes of 2,500 kg.
- 2 cranes of 2,500 kg.
- 1 bridge crane for coal.
- 1 fixed crane of 10,000 kg.

Finally, as accessory apparatus, the docks of Braila and Galatz are equipped with :

- 5 floating grain elevators.
- 1 floating dock of 2,400 tons, in two parts, for raising and repairing ships.
- 2 service tugs.
- 3 bucket dredgers.
- 5 barges with folding bottoms.

The funds which have been used for construction work in the Danube ports have been procured partly from State resources and partly by a tax of $\frac{1}{2}$ % on the value of all goods imported and exported.

These works and plant, which were sufficient for normal traffic before the war, have become absolutely inadequate since then, owing to the invasion of the Roumanian ports by foreign produce.

The crisis in railway transport has largely contributed to the overcrowding of the warehouses and to all kinds of difficulties in operation.

The question of enlarging and perfecting the equipment of the ports is regarded by the Roumanian Government as one of the first importance.

For the two ports of Braila and Galatz alone, it is necessary to spend a sum of about 30 million lei in order to meet present requirements.

In addition to the above works, the Roumanian Government has, since the year 1890, carried out improvements on the navigable channel ; these include :

The removal of obstacles from the navigable channel (sunken boats, trunks of trees, etc.).

Dredging of sandbanks as they form.

Improvements at the points of confluence with the more important streams ;

Strengthening of banks undermined by the current, etc.

All this work has been carried out by means of special apparatus procured by the hydraulic service: bucket dredgers, tugs, barges, floating cranes, etc.

Workshops have been established specially for the repair and upkeep of this apparatus.

The Roumanian Government, being anxious to maintain the freedom of navigation on the Danube under good, assured and easy conditions for all flags, has not levied any dues to meet expenditure.

The result obtained has been the deepening of the navigable channel at difficult points at low water from 1.20 metres to 2 and even 2.20 metres.

In order to assure navigation, Roumania has organised a special service for the regular depth measurement. The figures for the levels and depths are published daily in hydrographic charts. Moreover, the channel is equipped with signals and luminous buoys.

Keeping always in view the desired improvements, the State has initiated a detailed study of the levels of the Danube, and has arranged for transversal profiles of the whole bed; these profiles are being fixed by benchmarks, which will serve for further work in connection with the study of the river system.

This work has been carried out as far as Corabia. Numbered charts have been made with level lines marking the depth of the river.

Finally, the kilometrage of the Danube has also been carried out from Galatz to Severin.

The works in our ports, particularly construction works, were greatly damaged during the war. Their repair commenced as soon as the enemy armies evacuated our territory, and probably in the near future we shall be able to restore pre-war conditions in the Danube ports.

However, the state of the navigable channel of the Danube remains unsatisfactory by reason of the great amount of wreckage which accumulated throughout its length during the war. The removal of these obstacles is one of the most important pre-occupations of the Roumanian authorities. Owing to the wreckage, the maintenance and buoying of the navigable channel have become a more difficult matter, requiring great effort and redoubled care.

After having re-installed and re-equipped the workshop at Giurgiu for the purpose of repairing the boats and floating apparatus damaged through the war, we have now at our disposal for this work :

- 6 bucket dredgers of a capacity of 100 to 600 cubic metres per hour.
- 6 tugs of 150 to 500 h. p.
- 3 steam launches.
- 10 barges (with folding bottoms).
- 4 transport barges.
- 2 floating cranes of 20 to 60 tons.
- 2 pontoons for raising wreckage, capacity 200 tons.
- 2 pontoons for raising wreckage, capacity 400 tons, in course of installation.
- 100 signalling buays, 30 of which are lighted.
- 2 complete sets of diving apparatus.
- 2 petroleum tanks.

The principal item in the programme of work that still remains to be done as regards the navigable channel of the Danube will be to obtain a minimum depth of 3 metres throughout its course, starting from Turnu-Severin.

In order to effect this, Roumania will increase her fleet of dredgers, tugs, and other floating apparatus sufficiently to excavate in time the banks forming in the low water.

The new equipment will be of sufficient capacity for work on a large scale and will be completely up to date.

The bulk to be dredged in order to obtain a minimum depth of three metres will probably reach the figure of 3 million cubic metres, and the cost will be about 15 to 16 million lei per year.

This deepening of the river will be effected not only by dredging but also by other work on the banks and in the bed of the river, especially by narrowing certain sections, building longitudinal dykes, jetties, damming less important branches, etc.

To assist in navigation, the present special Roumanian service of buoys and signals will be enlarged. The apparatus, boats and buoys which this service has at its disposal will be much increased, and all the buoys marking the navigable channel will be equipped with special apparatus to light the channel in order to make night navigation possible in all weathers.

In order to clear from the Danube the wreckage sunk during the war and scattered throughout the course of the river, Roumania has ordered special apparatus, that is to say, new floating cranes, elevator pontoons, pumps for refloating, etc., and at the same time efforts have been made to obtain the assistance of the salvage companies in order to complete these operations, so necessary to navigation, as quickly as possible.

The researches on the Danube which were undertaken long ago will be continued above Corabia, so that plans can be drawn up for the improvement of navigation by means of fixed constructions in the bed of the river.

The kilometrage and the levelling of the Danube which was begun some time ago will be resumed and continued throughout the course of the river, as well as above Severin.

As regards the ports, Roumania proposes in the first place to add to

the warehouses and mechanical equipment, so that goods can be more rapidly handled or stored, for at present all our principal ports, such as Giurgiu, Oltenitza, Braila, Galatz and Constanza, are encumbered with goods which have been sent to us in great quantities and piled up in these ports.

Moreover, our programme for improvements in the Danube ports includes a series of works specially concerning the ports of Braila and Galatz, among which we may mention :

The connection of the two present basins of Galatz by means of a canal which can also be used as a new commercial harbour, as well as the establishment between the ports of Braila and Galatz of a line of communication running parallel to the Danube, and, finally, the establishment at Galatz of a large free zone for the construction of large warehouses, the development of new industries, etc.

As all the ports in our new territory are distinctly inferior to the ports of the Old Kingdom, it will be necessary to construct new works and fit them for traffic as soon as possible.

In constructing new ports, we are paying due attention to the economic development of the country.

Special mention should be made of the works which will have to be constructed on the rapids between Moldova and Severin.

The work which was done on this difficult portion of the river by the Hungarians is far from satisfactory, and in consequence of a mistaken idea of the principles to be adopted in order to render this section navigable, the following effects, which are by no means favourable to navigation, have been produced.

In the Iron Gates Canal (1,700 metres) the rapidity of the current varies with the level from 2 metres per second to 5 metres per second.

With a level of 5.50 metres at Orsova, a tug of 500 to 600 h. p. can draw a barge (schlep) with 600 to 700 tons load, and a steam tug of 1,000 h. p. can draw 2 schleps of 600 to 700 tons each through the old waterway parallel to the canal.

With a level of only + 3 metres at Orsova, a tug of 700 to 800 h. p., can take a schlep of 150 tons load, and a tug of 1,100 h. p. can take 2 schleps of 400 to 560 tons each, through the canal itself.

In the "Gazane" the rapidity of the current varies between 1.60 m. and 4 metres per second, and in the "Geben" the current is almost as swift as at Iron gates.

In these circumstances it may be said that navigation is seriously hindered on the section Severin-Moldova, and that in order to remedy this the work already carried out must be re-executed on different principles in order to reduce the abnormal speed of the current in these sections and also to assure a sufficient depth for navigation at low water.

Apart from the navigable channel of the Danube, Roumania will also undertake work which is equally urgent for the improvement of navigation on the Pruth, the Dniester and the other inland rivers, as well as the construction of a large and navigable canal to connect the capital with the Danube.

As regards repair and other urgent work for the hydraulic service (upkeep of the navigable way and the Danube ports, including the Galatz and Braila docks) these will involve an expenditure of about 500,000,000 lei.

B. RIVER FLEET.

The foreign trade of Roumania, a country pre-eminently agricultural, underwent great development before the war owing to the increase in its grain production.

Roumania is watered throughout by a natural navigable waterway—the Danube—which, as a means of communication, contributed in a great measure to the development just mentioned, especially since the European Commission on the Danube Mouth and the Roumanian technical authorities have improved the navigable conditions of this great artery.

Before the war, at a quite recent date, almost the whole of the traffic of the Lower Danube was under the control of the old Austro-Hungarian Monarchy.

The political and economic evolution of the riparian States resulted in a division of this control among several States, in consequence of their participation in the Danube commerce.

The six following groups are engaged in this commerce under their own national flags :

1. The Austrian Navigation Company, known as the D. D. S. G.
2. The Hungarian Navigation Company, known as the M. F. T. R.
3. The Roumanian River Navigation Company (N. F. R.).
4. The South German S. D. Navigation Company.
5. The Russian Navigation Company.
6. The Serbian Navigation Company.

1. *The Austrian Navigation Company (D. D. S. G.).*—The importance of the oldest navigation company, the D. D. S. G., declined with the establishment of the principles of freedom by the Treaty of Paris of 1856. The losses which it suffered were compensated by State subsidies from the former Monarchy.

Before the war the company had 134 steamboats and tugs with a total registered h. p. of 58,365.

851 barges of a total capacity of 442,249 tons.

The number of passenger boats was 45, representing a total horse power of 19,920.

The total value of these vessels amounted to 90 million francs.

This company maintained regular passenger and goods services between Regensburg and Soulina.

The approximate gross annual revenue of this company was 21,500,000 crowns, while the annual expenditure amounted to 17,800,000 crowns.

The annual surplus over expenditure was approximately 3,500,000 crowns. Moreover the company received subsidies from the State amounting to 1,200,000 crowns annually.

The proportion between the annual surplus and the capacity of the transport vessels was 8,65 lei per barge ton.

The proportion between the amount of goods transported annually and the total capacity of the vessels was 5,03 tons of goods per barge ton.

Finally, the kilometre-tonnage per barge was 2,572 annually.

2. *The Hungarian Navigation Company M. F. T. R.*—This company was established on the Danube in 1895 with a capital of 20 million crowns, and, in view of its political and commercial objects, received from the Hungarian Government an annual subsidy of 60,000 to 100,000 crowns as well as other advantages.

The company's fleet consisted of 14 passenger ships of 5,650 total h. p. 48 steam tugs of 18,900 total horse power.

262 barges of 139,196 tons total capacity.

The approximate gross revenue of this company was 8 million crowns, while its expenditure amounted to 6,800,000. A surplus remained of approximately 1,200,000 crowns.

The proportion between this surplus and the total capacity of the transport vessels was 9,03 lei per barge ton.

3. *Roumanian River Navigation Company (N. F. R.)*.—This company was founded in 1890 under a contract between Serbia and Roumania, by which the latter country agreed to supply, and transport to Serbia, salt from its mines.

This navigation company developed rapidly under the auspices of the State, and very soon took its place among the principal navigation companies on the Danube.

Its fleet consists of 14 passenger boats, 23 tugs, 119 barges on the Danube, 23 barges on the Pruth, 12 tanks and 4 landing pontoons—a total tonnage of 96,364 tons and a registered horse power of 15,880.

The present value of this fleet is approximately 200,000,000 lei.

The normal traffic before the war was 340,000 passengers and 500,000 tons of various goods, of which 150,000 tons were goods in bales and 350,000 tons of various goods in bulk, such as grain, timber, coal, ore, salt, petroleum products, etc.

After the war, that is to say in 1920, the passenger traffic amounted to 1,062,000 persons; the goods traffic amounted to 200,000 tons of various merchandise, of which 60,000 tons were in bales and 140,000 tons in bulk.

It is thus clear that the passenger traffic has increased, while the goods traffic has decreased owing to the cessation of export.

The gross annual revenue of the Roumanian River Navigation Company before the war was approximately 3,700,000, whilst expenditure amounted to 3,000,000 lei.

After the war, in 1920, gross revenue amounted to 30,000,000 lei and expenditure to 24,000,000.

The proportion between the annual surplus and the total transport capacity was 10,68 lei per barge ton.

The average of kilometre-tons carried annually was 2.436 per barge ; and the proportion between the quantity of goods carried annually and the total capacity of the transport vessels was on an average 5.24 tons of goods per barge ton.

The co-efficient of operation of this fleet was therefore very high ; this was due to the perfect organisation of this company, which has agencies, warehouses, and various plant in all the Danube ports.

Another Danube navigation company, a private enterprise known under the initials S. R. D., was founded before the war with a capital of 7,200,000 lei and a fleet comprising 60 schleps of 75,000 tons, 4 steam tugs, 2 tanks, 4 elevators.

After the war, it developed considerably, the capital being raised to 30,000,000 lei, which is now to be further increased to 45,000,000. Its fleet comprises today 80 schleps of 100,000 tons, 11 tugs of 3,100 horse power, 10 tanks, 4 elevators and 2 passenger boats which are being purchased.

The traffic of this company was 150,000 tons, which it is hoped will be doubled when its fleet is completely repaired.

4. *The South German Company*.—This company carries on operations on the Lower Danube. It possesses no passenger boats and had, before the war, a fleet composed of 99 barges of a total capacity of 63,773 tons, and 11 tugs of 6,000 registered horse-power.

The gross revenue of this company was approximately 2,000,000 marks and the expenditure was 1,500,000.

This company received no subsidies.

The proportion between the annual surplus and the total capacity of the transport vessels was 9.60 lei per barge ton.

In addition to the four powerful groups mentioned above, there also existed before the war a Russian navigation company and a Serbian company.

The Russian company appeared on the Danube in 1847, to disappear soon afterwards and re-appear again in 1877 under the name of Société Gagarin. Later, it amalgamated with another Russian navigation company carrying on a service between Odessa and Belgrade.

Its fleet consisted of 4 passenger ships, 120 barges, 18 petrol tanks.

Finally, we must mention the Serbian Navigation Company, which operated only in the Save and on the Danube, between Radujevatz and Vienna, that is to say, on the Middle Danube.

Besides the navigation companies properly so-called as mentioned above, there are more than 300 shipowners on the Danube, mostly of Greek nationality, with a fleet of approximately 500 barges and of 500,000 total tonnage.

Before the war there were in all on the Danube :

428 steamships with a total horse power of 137,000 and 2,479 barges of a total capacity of 1,200,000 tons.

The annual number of vessels entering and leaving Roumanian and Danube ports was from sixty to seventy thousand.

The total traffic on the Danube both as regards river and sea-going vessels amounted to twenty-three or twenty-four million tons.

Twenty-two per cent of the total tonnage, twenty-nine per cent of the total coal carried, thirty-four per cent of the total number of vessels, and sixty-six per cent of the passenger traffic was under the Roumanian flag.

The river traffic, amounting to 14,000,000 tons, was distributed before the war as follows :

Bavaria	433,000 tons
Bulgaria	669,000 tons (in 1910)
Austria	2,590,000 tons (in 1912)
Hungary	5,094,000 tons (in 1913)
Roumania	5,837,000 tons (in 1910)

The number of vessels (tugs, barges, tanks, pontoons, launches, passenger boats, elevators, war vessels, dredgers, etc.) sunk in the Lower Danube during the war was approximately 250, with a tonnage of about 150,000 tons.

The problem with which Roumania is faced, to restore normal conditions of navigation and to develop navigation to the requisite extent, will be solved by increasing the fleet of the Roumania River Company ; this will involve an expenditure of about 250 millions.

The present rates for merchandise transported on the Danube are ten times greater than the pre-war rates, whilst the rates for cereals are 20 to 25 times greater than the pre-war rates.

After the war, the only navigation companies which were able to operate were the N. F. R. (Roumanian River Navigation Co.) the S. R. D. (Roumanian Danube Company), the Lloyd Triestin and the Serbian Navigation Company. The Inter-Allied Danube Commission also had a certain number of tugs and barges engaged in commercial traffic on the Danube.

Fuel.

Before the war, the boats of the Roumanian River Navigation Company consumed annually 15,000 tons of petroleum residue (mazout or pacura) or approximately, 1 ton of fuel per steam h. p. per year.

The calorific power of this fuel is 11,000 calories.

The petroleum was of native origin and cost, on the average, 35 lei per ton.

Since the end of the war, the annual consumption of the N. F. R. boats has been :

12,000 tons of native "pacura", the price of which has varied from 550 lei to 820 lei per ton, which represents an increase of about 2,000 per cent compared to the pre-war price, and 3,500 tons of coal, also of native origin, the price of which varies from 500 to 1,500 lei per ton.

The total consumption of fuel by all the river vessels and plant on the Danube may be estimated at 150,000 tons of pacura, 50,000 tons of coal from the riparian countries and 50,000 tons from other countries.

Financial Situation.

A sum of 20,000,000 lei, representing the expenditure necessary to put the present fleet into good condition and to complete the equipment of the passenger boats, is required to meet the immediate needs of Roumania's river navigation service.

In order to carry out the programme for increasing the river-fleet of the N. F. R. within 5 or 6 years, about 220,000,000 lei will be required.

Recapitulation of the Roumanian River Fleet, and Financial Situation.

A.—For the upkeep and buoying of the navigable channel of the Danube, Roumania possesses :

- (a) 6 bucket dredgers of 100-600 cu. metres capacity per hour.
- (b) 6 tugs 150-500 h. p.
- (c) 3 steam-launches.
- (d) 10 barges (folding).
- (e) 4 transport barges.
- (f) 2 floating cranes of 20 and 60 tons capacity.
- (g) 2 pontoons equipped for raising wreckage, of 300 tons capacity.
- (h) 2 pontoons, in process of installation, of 400 tons.
- (i) 100 signalling buoys, 20 of which are luminous.
- (j) 3 complete divers outfits.
- (k) 2 petroleum tanks.
- (l) 20 landing pontoons with metal foot-bridges.

B.—For working the docks of Braila and Galatz :

- (a) 13 mobile cranes of 1,500 to 2,500 kg. capacity each.
- (b) 1 bridge crane for coal.
- (c) 2 fixed cranes of 10,000 kilogrammes each.
- (d) 5 floating grain elevators.
- (e) 1 floating dock of 2,400 tons for the repair of ships.
- (f) 2 service tugs.
- (g) 5 barges (folding).
- (h) 2 bucket dredgers for maintaining the proper depth in the basins.

C.—For river traffic.

I. State Service.

- (a) 14 passenger boats.
- (b) 23 tugs.

- (c) 119 barges for transport in the Danube.
 - (d) 23 barges for the Pruth.
 - (e) 12 tanks.
 - (f) 4 landing pontoons
- the whole representing a tonnage of 96,364 tons and 15,380 registered horse-power.

2. *The Roumanian Danube Company.*

- (a) 80 barges of 75,000 tons.
- (b) 11 tugs of 3,000 h. p.
- (c) 2 tanks.
- (d) 4 elevators.

3. *Private River Services.*

- (a) 500 barges of 500,000 tons.
- (b) 60 tugs of 23,000 h. p.
- (c) 34 elevators.

The total traffic in the Roumanian ports before the war amounted to about 5,000,000 tons.

If to this is added the traffic in the ports which accrue to Roumania with the increase in her territory, it may be expected that future traffic will increase at least 50 %.

In order to estimate the fleet of river craft which we shall require for our probable traffic, we have taken the provisional figure of 7 million tons per year.

In order to deal with this probable traffic of 7 million tons, Roumania ought to possess 2,000 barges of 700 to 800 tons each, presuming that 1 barge could carry 3,500 to 4,000 tons annually in five trips, according to the conditions of the Danube system.

According to the above calculations, therefore, the h. p. of the tugs necessary should be :-

$$1/10 \times 2000 \times 700 \text{ tons} = 140,000 \text{ h. p. (steam).}$$

As the present fleet is about 700,000 tons and of 32,000 h. p., including captured vessels, for future traffic on the Lower Danube, the following new tonnage will be required :

$$1,400,000 - 700,000 = 700,000 \text{ tons.}$$

$$140,000 - 32,000 = 108,000 \text{ h. p., or}$$

1,000 barges of a capacity of 700 tons each and
300 tugs with 108,000 total h. p.

The total cost, at present prices, of the fleet of river craft required to complete the fleet already in existence on the Lower Danube will be about 1,500,000,000 lei.

For the upkeep and improvement of navigation in the navigable channel, as well as in the port and docks, and for new constructions and the equipment of river ports, a further sum of about 500,000,000 lei is required.

In order to meet the requirements of the river traffic which may be foreseen for the near future, for the up-keep of the navigable waterway of the Lower Danube and to complete the equipment of the river ports, about 2,000,000,000 lei will be required.

III.

MARITIME NAVIGATION.

A. PORTS.

Roumania is connected with the Black Sea by the mouths of the Danube and by several sea-ports, the most important of which is Constanza.

The other ports, Mangalia, Cavarna and Balcic are worked in a primitive manner; they have no plant and are not connected with the rest of the country by rail.

On the Black Sea coast, Roumania has installed light-houses at Bugaz, Sulina, at the mouth of the St. George arm of the Danube, at Constanza, Tuzla, Mangalia, Sabla and Caliacra.

Port of Constanza.

This port, which is of recent construction, is connected with the rest of the country by a railway which crosses the Danube and its branches at Cernavoda; the engineering works carried out to effect this crossing are certainly of a monumental nature and may be regarded as among the greatest technical achievements in Europe.

More than 100,000,000 lei were spent on building and equipping the Port of Constanza.

The area of the protected basins in this port is 60 hectares; its quays are more than 4,300 metres long.

The minimum depth of water in the basins is 8 metres, except in the petroleum basin, where it is 9 metres.

The area of the platforms upon which goods may be unloaded is nearly 7 hectares; the goods warehouses cover more than 10,000 sq. metres.

So far, this port does not possess special equipment for import purposes as the chief object in view has been the export of cereals and of the petroleum products of the country.

The plant constructed for this purpose and in use for more than ten years includes :

(a) Two silos for the storage of grain, capacity 30,000 tons each.

(b) a complete installation for receiving and warehousing petroleum products and discharging them into tank ships.

The present plant is still insufficient for the traffic of the port, so that room cannot be found in the warehouses for some of the goods which have arrived from abroad, and which are therefore exposed to the weather ; this accumulation is due to the war, that is to say, to the scarcity of rolling-stock and the interruption of the rail connection between Constanza and the rest of the country.

This interruption was caused by the destruction of a part of the bridge over the Danube at Fetesti during the war ; even now, trains have to be transported from one bank of the Danube to the other by ferry-boats.

This bridge will, however, soon be rebuilt.

The programme required to enable our sea-ports to cope with the needs of the country includes, in so far as the port of Constanza is concerned :—

(1) Repairs and improvements, apparatus to maintain the depth of the basins, modern equipment for the quays ; this involves in all an expenditure of about 60 million lei.

(2) Increasing the capacity of the port of Constanza and improving other maritime ports : the cost of this work will amount to 400 million lei.

To sum up, we may say that, in order to adapt the sea-ports of Roumania to the requirements of the country, an outlay of nearly half a milliard lei will be necessary.

In addition to the work of improving the commercial ports, provision will have to be made for the construction of a naval port on the Black Sea ; this will involve a supplementary expenditure of about 100 million lei.

Traffic, Railways.—Before the war, the following trains were run on the railway connecting the port of Constanza with the rest of the country :—

Two passenger-trains per day ;

Two fast trains per day ;

Two express trains, three times a week ;

10-15 goods-trains per day.

At present there is only one passenger-train and one goods-train running daily on this line.

The petroleum districts of the country are connected with the receiving plant at the port of Constanza by a pipe-line with a flow of 25 cubic metres per hour.

Maritime Shipping Lines.—Before the war, the principal navigation companies with agencies at Constanza were as follows :—

1. *Mail Boats.* — Roumanian Maritime Service, Società Italiana di Navigazione Maritima, Austrian Lloyd, Compagnie Fraissinet, Deutsche Levante Linie, Messageries Maritimes, Adria (S. & W. Hoffman).

2. *Trading Vessels.* — Roumanian Maritime Service and Johnston Line.

Since the war, the number of companies whose boats touch at the port of Constanza has been increased by the following :—

Swenska Orient Linien, America Levant Line (London), Cunard Line (Liverpool and London), Ellerman and Buckhall Steamship Co. Limited (Liverpool), Furness (Johnston Line), James Moos & Co. (Liverpool), Westcott Line (London), American Line (New York and Southampton), Anglo-Saxon Petroleum Co. (London), Oriental American Line, Export Steamship Co.

3. *Operation.* — The figures for commercial traffic in the port of Constanza before the war are as follows :—

Imports (average of years 1910-1915) 170,000 tons.

Exports (average of years 1910-1915) 1,200,000 tons.

After the war, that is to say, during the year 1919-1920, imports amounted to 67,000 tons, and exports to only 13,000 tons.

The average gross revenue derived annually from customs duties and the handling of goods before the war was 9,000,000 lei ; annual working expenses varied from 1,500,000 lei to 1,800,000 lei.

After the war, that is to say, during the year 1919-1920, the gross revenue amounted to 11,000,000 lei and working expenditure to 5,500,000 lei.

The number of vessels which entered the port of Constanza annually before the war averaged 1,000 ; the number leaving was almost the same.

During the year 1920-1921, the number of vessels entering fell to 920.

Fuel.

Two kinds of fuel are used in working the plant in the port of Constanza — the petroleum products of the country, and foreign coal.

The amount consumed annually is 1,500 tons of petroleum products, and 400 tons of coal.

The price of liquid fuel (pacura) before the war was 35 lei per ton, whilst the price to-day is 550 lei ; the price of coal, which used to be 30 lei per ton, is to-day 1,400 lei.

B. NAVIGATION.

As the Danube is accessible to sea-going vessels for 170 km. from its mouth, an important trade is carried on in this portion of the river through the ports of Sulina, Tulcea, Galatz and Braila.

It is to be noted that through the Sulina mouth alone, more than 5,000 Roumanian and foreign vessels enter and leave annually, with an average annual tonnage of 2,000,000 tons.

Roumania's sea-going passenger and goods service consists of:—

6 cargo-boats of 3,500 tons	}	Totalling 35,000 tons.
2 " " 7,000 "		
and 3 passenger and goods boats of 4,500 tons	}	Totalling 21,700 tons.
1 " " " " " 3,600 "		
1 " " " " " 2,100 "		
1 " " " " " 2,500 "		

The last-mentioned are very fast boats, and, before the war, were on the Eastern line, Constanza-Constantinople-Alexandria (Egypt).

The cargo-boats carried goods between Roumania and different foreign ports, including Rotterdam, which was the principal market for our grain.

At present, the passenger and goods boats ply regularly between Galatz-Constanza-Naples, and between Constanza and Constantinople.

The traffic carried by these boats before the war amounted to:—

86,680 passengers in 1913-1914, 32,000 tons of goods by fast boats, 256,000 tons of grain and other goods.

The traffic to-day is reduced to 41,650 passengers in 1919-1920, 39,000 tons of goods by fast boats, 134,926 tons by cargo boats.

The pre-war rates averaged 10 lei per ton for the mailboats on the Galatz-Alexandria route and 13 lei per ton for cargo-boats (Galatz-Rotterdam).

After the war, goods rates were increased, and reached:—

(a) 260 lei per ton for mail-boats (Galatz-Naples); (b) 500 lei per ton for cargo-boats (Galatz-Atlantic) whilst the passenger rates were nearly 28 times the previous rates.

Roumania proposes in the future to increase her fleet by: (a) 5 fast steam-ships to extend the Galatz-Naples route as far as Marseilles, and to re-establish communication with the Orient, by resuming Constanza-Alexandria service; (b) 5 cargo-boats of 6,000 tons; (c) 3 petroleum tank ships of 3,000 to 5,000 tons.

The total cost of the boats comprised in these proposed additions will be about 2 milliard lei, at the rate of 200 lei to the pound sterling.

Fuel.

Before the war, the S.M.R. boats consumed coal and pacura in the following quantities :—

18,960 tons of coal annually; 31,200 tons of pacura annually.

The cost of the coal was about 31 lei per ton; of pacura, about 32 lei.

The S.M.R. boats use the same fuel now but in different quantities: 23,170 tons of foreign coal at 700 to 1,400 lei per ton. 23,000 tons of native pacura at 120 to 550 lei per ton.

IV.

AIR AND MOTOR TRANSPORT.

A. AIR TRANSPORT.

Introduction. — Civil aviation in Roumania is administered by the Aviation Department of the Ministry of Communications.

This Department was instituted in July, 1920.

Up to the present, there are no air ports for civil aviation.

The Department of Civil Aviation has drawn up a general scheme for the organisation of civil aviation in Roumania. This scheme will be carried into effect as necessity arises.

The scheme provides for :

- (a) Building sub-structures ;
- (b) Operation ;
- (c) The construction, fitting up and operation of factories for the manufacture of equipment for air navigation ;
- (d) The training of a staff of pilots, expert engineers, mechanics, etc., in a special school.

Proposed Air Routes. — The length of the home air routes will be approximately :

For the permanent system	2,200 km.
For the summer system an addition of	1,000 km.

Total. 3,200 km.

The expenditure for the proposed work is estimated as follows :—

For building and equipping air-ports	250,000,000 lei
For building and fitting up an aeroplane factory	75,000,000 »
For building and equipping the school	10,000,000 »

Total. 335,000,000 lei

The annual expenditure is estimated at :

For operating the routes (1,712,000 km. flying) . .	75,000,000 lei
For the school.	3,000,000 „
Total.	78,000,000 lei

The details of these expenses are given in Annex No. 1.

At the moment, the following air-ports are being organised :

Bucharest, Galatz, Chisinau, Craiova.

Plans have also been made for the organisation of relief stations between the principal ports.

The organisation will conform with the most recent standards of modern aeronautics and with the air Convention of Versailles.

The aeroplanes of the Franco-Roumanian Company of Paris will soon pass across Roumania, carrying mails, telegrams, parcels and passengers on the following routes. :

Prague-Vienna-Budapest-Belgrade-Bazias-Craiova-Bucharest-Constantinople, and will connect with the Paris-Strasburg-Prague-Warsaw service maintained by the same company.

The agreement signed with the Franco-Roumanian Company is for twenty years.

The maximum rates for the above-mentioned journey will be .

From Bucharest to	Passengers	Goods (for 1 kg. or fraction of 1 kg.)	Letters (for 20 gr. or fraction of 20 gr.)
Constantinople	500 fr.	5 fr.	2 fr.
Belgrade.	500 „	5 „	2 „
Budapest	1,000 „	10 „	4 „
Vienna	1,500 „	15 „	6 „
Prague	2,000 „	20 „	8 „
Strasburg	2,500 „	25 „	12 „
Paris	3,000 „	30 „	13 „
Junction } Warsaw	3,500 „	35 „	15 „
at Prague } London	3,500 „	35 „	15 „

For the first five years, beginning from April 1st, 1922, the State grants the company a maximum annual subsidy of 6,500,000 lei ; this works out at 32,500 lei for each complete Paris-Constantinople return journey.

This subsidy will only be paid for genuine and complete journeys, and then only if, at the end of the financial year, the dividend paid by the company is less than 10 per cent.

During the year 1921, a State air service will be inaugurated on the route Bucharest-Galatz-Chisinau.

A sum of 4,500,000 lei is estimated for the organisation of this route. The details of expenditure are shown in Annex No. 2.

Traffic. — At present there is no traffic.

Fuel. — Roumania can provide the necessary spirit (benzine) at a cost of 2 lei per kilogram for home consumption, and at an average of 7 lei per kilogram for foreign consumption (export).

Conditions of Transit and Customs. — For air transit, rules will be adopted in conformity with Articles 9 and 12 (Air Transit), Annex H, of the Convention of Versailles for the Control of Air Navigation (October 13, 1919):

ART. 9. — Aircraft landing in foreign countries are, in principle, liable to customs duties if such exist.

If they are to be re-exported, they shall have the benefit of the regulations as to permit by bond or deposit of the taxes.

In the case of the formation between two or more countries of the Union of Touring Societies, the aircraft of the said countries will have the benefit of the regulations of the "Tryptique".

ART. 12. (*Air Transit*). — When an aircraft to reach its destination must fly over one or more contracting States, without prejudice to the right of sovereignty of each of the contracting States, two cases must be distinguished:—

1. If the aircraft neither sets down or takes up passengers or goods, it is bound only to keep to the normal air route and make itself known by signals when passing over the points designated for such purpose.

2. In other cases, it shall be bound to land at a customs aerodrome, and the name of such aerodrome shall be entered in the log book before departure. On landing, the customs authorities shall examine the papers and the cargo, and take, if need be, the necessary steps to ensure the re-exportation of the craft and goods or the payment of the dues.

The provisions of paragraph 9 (2) are applicable to goods to be re-exported.

If the aircraft sets down or takes up goods, the customs officer shall verify the fact on the manifest, duly completed, and shall affix, if necessary, a new seal.

The following Customs aerodromes are to be established:

Bucharest, for the South and South-East; Oradia Mare, for the West; Cernauti, for the North; Chisinau, for the East.

Until new arrangements are made, aeroplanes which pass over Roumania will be obliged to land if required, or to pass over the nearest of the above-mentioned aerodromes.

Laws and Regulations. — The law in force in Roumania concerning the establishment and navigation of air routes is given in Annex No. 2.

Regulations for inland air navigation are under consideration.

ANNEX No. I.

Cost of the Substructure for the National Air System.

(Pre-war Prices)

WORKS TO BE EXECUTED	Area or quantity	Cost per unit Lei	Cost	
			Partial Lei	Total Lei

I. For a First-class Air-port.

(a) Expropriations:		Lei	Lei	Lei
Landing ground	120 ha.	1,000	120,000	120,000
(b) Buildings	—	—	—	1,350,000
(c) Equipment	—	—	—	730,000
Total	—	—	—	2,200,000

II. For a Secondary Air-port.

(a) Expropriations.	120 ha.	Lei 1,000	Lei 120,000	Lei 120,000
(b) Buildings	—	—	—	750,000
(c) Equipment	—	—	—	730,000
Total	—	—	—	1,600,000

III. For a Relief Station.

(a) Landing ground	50 ha.	Lei 1,000	Lei 50,000	Lei
Buildings and Equipment . . .	—	—	50,000	
Total	—	—	—	100,000
Carried forward				3,900,000

ANNEX NO. I (*continued*).

WORKS TO BE EXECUTED	Area or quantity	Cost per unit	Cost	
			Partial	Total
<i>Brought forward</i>				3,900,000
IV. <i>For Routes.</i>				
1. PERMANENT ROUTES.				
<i>(a) The Bucharest-Oradia-Mare Route (connection with the West.)</i>				
First-class Ports :				
Craiova, Temisoara, Oradia-Mare	3	2,200,000	6,600,000	
Turnu-Severin and Arad.	2	1,600,000	3,200,000	
Relief Stations	8	100,000	800,000	
				10,600,000
<i>(b) The Bucharest-Giurgiu Route (connection with the Balkans.)</i>				
Secondary Ports :				
Giurgiu.	1	1,600,000	1,600,000	
Relief Stations.	1	100,000	100,000	
				1,700,000
<i>(c) The Bucharest-Constantza Route (connection with the Black Sea Ports.)</i>				
First-class Ports :				
Constantza	1	2,200,000	2,200,000	
Relief Stations.	3	100,000	300,000	
				2,500,000
<i>(d) The Bucharest-Cernauti Route (connection with Poland.)</i>				
First Class Ports :				
Jassy and Cernauti.	2	2,200,000	4,400,000	
Secondary Ports :				
Tecuci	1	1,600,000	1,600,000	
Relief Stations.	8	100,000	800,000	
				6,800,000
<i>Carried forward</i>				25,500,000

ANNEX No. I (continued).

WORKS TO BE EXECUTED	Area or quantity	Individual cost	Cost	
			Partial	Total
<i>Brought forward</i>				25,500,000
<i>(e) The Bucharest-Galatz Route (connection with the Ukraine)</i>				
First-class Ports :				
Galatz	1	2,200,000	2,200,000	
Secondary Ports :				
Braila	1	1,600,000	1,600,000	
Relief Stations	5	100,000	500,000	
<i>(f) The Galatz-Chisinau Route</i>				4,300,000
First-class Ports :				
Chisinau	1	2,200,000	2,200,000	
Relief Stations	3	100,000	300,000	
				2,500,000
2. THE ROUTES FOR SUMMER SERVICES.				
<i>(a) The Bucharest-Brasov Route</i>				
Secondary Ports :				
Brasov	1	1,600,000	1,600,000	
Relief Stations	2	100,000	200,000	
<i>(b) The Bucharest-Cluj-Oradia- Mare Route.</i>				1,800,000
Secondary Ports :				
Pitesti, Sibiu and Cluj	3	1,600,000	4,800,000	
Relief Stations	5	100,000	500,000	
<i>(c) Galatz-Sibiu Route.</i>				5,300,000
Relief Stations	4	100,000	400,000	
<i>(d) Bucharest Air Port.</i>	1	2,200,000	2,200,000	400,000
General total.	—	—	—	42,000,000

At present prices the total must be reckoned at 250,000,000 lei.

Budget of Operating Expenses.

Length of permanent routes 2,200 km.

Length of summer routes 1,000 »

Number of days' flight (permanent routes) :

Post 260

Passengers 70

Number of days' flight (summer system) :

Post 100

Passengers 30

Annual kilometrage :

Postal aeroplanes $2 \times 2,200 \times 260 + 2 \times 1,000 \times 100$ 1,344,000 km.

Passenger aeroplanes $2 \times 2,200 \times 70 + 2 \times 1,000 \times 30$ 368,000 »

Life of aeroplanes :

Postal aeroplanes unfit for service after approximately 20,000 »

Passenger aeroplanes unfit for service after approximately 30,000 »

Number of aeroplanes which will be unfit for service, including machines disabled by accidents :

Postal aeroplanes . . . $1.2 \times 1,344,000$

 20,000 80 aeroplanes

Passenger aeroplanes $1.2 \times 368,000$

 30,000 15 »

The present cost of an aeroplane, including spare parts, upkeep and repairs, until the aeroplane is unfit for service :

Postal aeroplane 300-400 h. p. 300,000 lei.

Passenger aeroplane 800-1,000 h. p. 700,000 »

Total present cost of aeroplanes :

Postal aeroplanes $80 \times 300,000$ 24,000,000 »

Passenger aeroplanes $15 \times 700,000$ 10,500,000 »

Total. 34,500,000 lei.

Annual consumption of spirit :

Postal aeroplanes 1,400,000 kgs.

Passenger aeroplanes 750,000 »

Total. 2,150,000 kgs.

Annual consumption of oil 215,000 kgs.

Cost of fuel :

$2.10 \times 2,150,000 + 15 \times 215,000$ 7,740,000 lei

Wages :

Staff of air-ports (600 persons) 12,000,000 lei

Flying Staff :

100 pilots + 100 mechanics 9,000,000 »

Auxiliary personnel 4,500,000 »

Total. 25,500,000 lei

SUMMARY.

Aeroplanes 34,500,000 lei

Fuel 7,740,000 »

Wages 25,500,000 »

Rolling stock and sundries 7,260,000 »

Total. 75,000,000 lei

ANNEX No. II.

Law regarding the Establishment and Operation of Air Routes.

CHAPTER I.

State Routes.

ARTICLE 1.—The State may establish and operate, in accordance with the laws and regulations in force, any air route whatsoever, whether for its own purposes or for the use of the public.

ARTICLE 2.—The construction, administration and operation of all air routes belonging to the State shall be carried out by the Ministry of Communications through its various departments.

CHAPTER II.

Concessions to Individuals.

ARTICLE 3.—Private persons, acting either as individuals or as companies, may establish and operate air routes for the service of the public, provided they have obtained the authorisation of the Council of Ministers. Holders of such concessions must conform in all respects to the terms of the present law, to its administrative regulations, to the conditions of their concessions, the regulations governing air traffic, and to all the laws in force.

ARTICLE 4.—The State may, in virtue of a decision of the Council of Ministers, grant concessions to private persons or companies for the operation of its air routes.

ARTICLE 5.—The State may, in virtue of a decision of the Council of Ministers, take part in the formation of air navigation companies in cases where the routes in respect of which concessions are demanded vitally affect the interests and defence of the country.

ARTICLE 6.—With a view to encouraging private enterprise, the State may, in virtue of a decision of the Council of Ministers, grant, to holders of such concessions, premiums, annual subsidies, annual amortisations and postal concessions to the prejudice of existing monopolies.

ARTICLE 7.—Applications for authorisation must be submitted to the Ministry of Communications, and must be accompanied by all the documents stipulated in the concession forms of the Ministry.

ARTICLE 8.—The Ministry of Communications shall submit every application to the Supreme Council on Communications, which will give a reasoned opinion upon it.

ARTICLE 9.—No application for establishment and operation of air routes will be considered unless it is accompanied by a Treasury receipt proving that the applicant has deposited for this purpose a guarantee of 200 lei for every kilometre of the route which it is proposed to operate. This deposit shall be returned when the route is in operation, but if the route is not in operation within the period stipulated in the concession, the concession may be withdrawn by the Council of Ministers. In such cases, the deposit and all existing works and equipment shall remain the property of the State without any indemnification whatsoever.

Communes, departments and companies associated with the State shall be exempt from this deposit; the Council of Ministers may exempt from payment of this deposit companies which are already operating abroad.

ARTICLE 10.—When authorising the construction and operation of an air-route, the State shall also, by Royal Decree, declare all the necessary works to be public utilities. In addition to the powers of expropriation resulting from this proclamation as public utilities, the holders of concessions shall enjoy the advantages arising from the laws in force for the encouragement of industry.

ARTICLE 11.—The Ministry reserves the right to authorise air navigation on the same route at any time, within the limits of the rights which it reserved under the terms of previous concessions.

ARTICLE 12.—The duration of the concession for operating the route and the conditions of possible repurchase before the expiration of the concession shall be determined separately by the specifications laid down in each individual case.

ARTICLE 13.—On the expiry of a concession, all plant shall, *ipso facto*, become the property of the State without indemnification. Repurchase of flying machines shall take place in accordance with the provisions laid down in the concession.

ARTICLE 14.—Holders of concessions shall be bound to agree to the connection of their routes with other routes if the Ministry so decides.

ARTICLE 15.—The Ministry of Communications shall have the right of permanent control over all air undertakings in regard to technical and administrative and financial matters. The Ministry shall supervise the accounts, plant, personnel, and operation methods, and shall see to the strict application of the laws and regulations in force.

ARTICLE 16.—If there is reason to question the successful working of any service on account of defective stock or incompetence of personnel, the Ministry of Communications may suspend operation until the holder of the concession shall have carried out such improvements as may be required by the Ministry, and, if necessary, the Ministry may even annul the concession without granting any indemnification to the holder.

When granting any concession, the Ministry shall ask the advice of the Supreme Council on Communications.

ARTICLE 17.—In case of mobilisation or any other serious situation in time of peace the State shall have the right to take over and operate all routes which it may consider necessary to take over and operate in accordance with plans drawn up beforehand by the Ministry of War, acting in concert with the Ministry of Communications. In such cases the State must act in conformity with the law on requisitions and shall, in addition, grant an annual indemnity equal to the average receipts of the last three years of operation.

ARTICLE 18.—The State shall have the right on all routes to transport its personnel and goods. The specifications of each concession shall establish the conditions and the limits within which the State may make use of this right and the manner in which payment for such transport shall be made.

ARTICLE 19.—The rates provided for in the concession shall be considered as maximum rates and shall not be increased except with the consent of the Council of Ministers. Holders of concessions may not make any reduction in the rates in force, except in the cases provided for in the specifications or approved by the Council of Ministers.

ARTICLE 20.—Holders of concessions shall be bound to conform to the law concerning the organisation of trades credits and workmen's insurance in all matters relating to their employees, including pilots and navigators.

ARTICLE 21.—No route conceded may be assigned, nor may several routes be amalgamated without the authorisation of the Government. If a route is abandoned by a concessionary or other persons entitled, it shall, *ipso facto*, become the property of the State, without any indemnification. In such a case, the State shall have the right to purchase the aeroplanes. Should the holder of a concession become bankrupt or go into liquidation, the creditors cannot transfer the concession of the route to a new holder without the full sanction of the Government; but they may continue to operate the route. Should the creditors not continue to operate the route or should they not be able to transfer the concession to another holder, the State may operate the route on behalf of the creditors.

ARTICLE 22.—Routes conceded in virtue of this law shall be public property.

CHAPTER III.

Final Provisions.

ARTICLE 23.—Administrative regulations shall furnish all necessary details for the application of the present law.

ARTICLE 24.—The present law shall come into force on August 1st, 1920. All provisions contrary to the law are, and shall remain, annulled.

The present law was voted by the Assembly of Deputies on August 23rd, 1920 and was passed by a majority of 117 votes to 3.

The present law was voted by the Senate on August 26th, 1920, and was passed by a majority of 71 votes to 1.

B. MOTOR TRANSPORT.

Before the war motor transport in Roumania was almost exclusively confined to touring and sporting cars. There were only a few motor-lorries, the majority of which belonged to the large landed proprietors and manufacturers, who used them for their own requirements.

Motor-tractors were beginning to be used in agricultural work.

Rail and animal transport was, moreover, less costly than motor transport.

Motor traction was more expensive for the following reasons :

- (1) The insufficient number of capable chauffeurs.
- (2) The lack of good repairing shops able to carry out all kinds of repairs.

These drawbacks existed before the war and continue to exist to-day ; spare parts are harder to obtain owing to import difficulties, and, above all, to the great variety of models imported since the war.

During the war imports were null ; the army had requisitioned, for military requirements, all vehicles belonging to private persons or to other State departments.

Owing to the difficult conditions under which these vehicles worked during the war, they were all completely ruined ; in order to meet transport requirements which have arisen since the war, imports have increased, and, for the year 1919, in spite of the price, reached a total of 600 vehicles.

The development of motor transport in Roumania is favoured by the extensive production of petrol fuel.

The motor industry scarcely exists. We only possess one factory — the “Martha” factory at Arad, in Transylvania — which manufactures principally motor-lorries, and which now has a very restricted output.

In normal times this factory employed about 1,200 workmen, and possessed a plant of 320 machine-tools ; it was capable of turning out from 8 to 10 lorries per month. Since the war only repair work has been done there, and the number of workmen is very much reduced. Owing to the lack of animal traction, and the bad state of railway transport, the Government is contemplating the adoption of motor transport both on the roads and railways, but this question is still under consideration.

During the war the whole system of communications throughout the kingdom fell into ruin owing to the heavy military traffic and the neglect of upkeep.

Some of the roads are still in good condition and can be used for motor transport. In Transylvania and in the Banat the roads are in excellent condition, while in Bessarabia, where they have been severely damaged, traffic is extremely difficult. Statistics collected before the war show that, taking into account only the territory of the Old Kingdom, we possess in all 28,000 km. of metalled roads, and have 20,000 km. under construction.

The Royal Automobile Club has drawn up a list of the roads in the Banat and Transylvania, which have a total length of about 30,000 kilometres. This publication, entitled " Guide to the Roads of Greater Roumania ", is printed in French and in Roumanian, and contains :

- (1) 25 coloured maps indicating all roads fit for vehicular traffic, as well as place names and situations.
- (2) A map of the roads of Europe, with the distances in kilometres and the routes to the principal towns.
- (3) Information useful to tourists.
- (4) An alphabetical list of place names, with a key for finding them on the maps.

The condition of the wooden bridges, which have been temporarily repaired since the war, is no better than that of the roads, and large sums will have to be spent upon them before they will be fit to bear heavy vehicular traffic.

TABLE.

Year	1911	1912	1913	1914	1915	1919	1920
I. MOTOR-CARS IMPORTED.							
Kilogrammes	682,349	1,325,359	983,509	639,539	117,147	1,178,386	1,290,000
Number of cars....	590	1,099	717	508	43	602	662
Value in lei	7,159,724	13,905,125	10,189,373	6,623,497	1,422,354	25,123,842	27,623,000
2. SPARE PARTS FOR MOTOR-CARS.							
Kilogrammes	40,711	81,456	54,267	44,478	7,783	56,668	62,200
Value in lei	814,220	1,629,120	1,085,340	888,560	194,575	1,993,435	2,194,000
3. OUTER AND INNER TYRES.							
Kilogrammes	141,902	203,310	262,274	191,195	269,755	236,880	260,000
Value in lei	1,277,118	1,829,790	2,360,466	1,720,755	5,395,100	28,426,320	31,250,000

The quantities for the year 1920 are approximate, as complete statistics are not yet to hand.

This table shows that since the year 1912 the number of motor-cars imported has decreased. This decrease is chiefly due to the Balkan War of 1913 and the European War in 1914.

Similarly, since the war, the expenditure on rubber tyres exceeds that on the vehicles themselves, this being due not only to the continued rise in the price of rubber but also to the more constant use of this class of vehicle, and the bad state of the roads.

Before the war, vehicles were imported from almost all the Western countries and from America.

Since the war American vehicles (particularly Fords) have arrived in greater quantities. The enemy countries have not up to the present sent us any motor-cars.

There are a few large import houses which import motor-cars, but there are very few private persons who order them directly from the factories. These firms also have their repair shops, one of which is very important, having a capacity of 50 machines and possessing an absolutely modern plant.

This firm is at present carrying out experiments on the railways with auto-trains drawing two or three waggons. These auto-trains are now running on two railways in the Old Kingdom. The firm has also recently established a passenger and goods service on the Bucharest-Brasov road.

This undertaking, however, does not pay because the motors are frequently damaged owing to the condition of the roads and to frequent accidents.

In order to cover the equipment expenses involved in a service of motor-lorries on the roads in Roumania, its rates must be at last 0.70 or 0.80 lei per person per kilometre and 2 lei per kilometre-ton for goods; actually the rates for goods are approximately three times higher.

Owing to the necessity for frequent repairs and the high cost of such repairs, numerous small repairing shops have sprung up in different parts of the town, the large repairing shops being too crowded.

But these shops, owing to their lack of modern plant and good workmen, turn out bad repairs.

From statistics furnished by the Prefecture of Police (Bucharest), the following table has been drawn up, which shows the number of motor-cars at present in the country :—

(1) Motor-cars officially registered at the Prefecture of Police, and used in the capital	2,122
(2) Non-registered and on sale in garages or under repair (all kinds)	1,000
(3) Military cars belonging to the Transport Corps throughout the country (all kinds).	2,500
(4) Motor-cars in the departments and Provincial towns (all kinds)	1,500
Total	7,122

About one-third of these motor-cars belong to the State, the remainder being private property.

Accounts kept in the various Government Departments relating to the upkeep of motors-cars for the year 1920-1921 show that the cost of upkeep of a motor-car or lorry is from 60,000 to 70,000 lei per annum.

The price of motor-spirit since the war has varied from 1.60 to 2.20 lei per litre, and oil, according to quality, from 4 to 10 lei per kilo ; these are trade prices.

State taxation levied on motor-car owners are of two kinds : (1) Municipal taxes ; (2) fiscal taxes.

Municipal taxation makes a distinction between taximeters and private cars.

Taximeters are subject to a daily tax which is at present 20 lei per day, no distinction being made as regards the power or class of the engine, and private cars to a quarterly tax, which varies according to the horse-power of the engine and class of the vehicle. On an average, this tax varies from 500 to 1,500 per annum.

Fiscal taxes are of three kinds, according to the property tax paid by the owner and to the class of garage ; they vary from 1,000 to 3,000 lei under the new system of taxation.

Imports are effected in accordance with the regulation with regard to the customs documents required for the temporary importation of motor-cars on international tours.

The documents drawn up in 1913 by the International Congress of Automobile Clubs are as follows :—

(a) Books of customs passes enabling the holder to pass all customs offices in the countries traversed on long tour.

(b) Special forms (tryptiques) for frequent journeys between neighbouring countries which have adhered to this system of reciprocal guarantees.

The rules of traffic for motor-cars, which came into force in Roumania by the Decree of August 3rd, 1913, (amended on July 14th, 1914), were drawn up on the model of those approved at Paris by the International Association of Recognised Automobile Clubs (R.I.A.C.R.), and the conditions to be fulfilled by motor-cars before they may run on public highways are specified in the International Traffic Convention signed at Paris in 1909.

The Roumanian Royal Automobile Club is the only organisation recognised and affiliated to the International Association of Recognised Automobile Clubs, and it has established in Bucharest an official school for chauffeur-mechanics, which is carried on in accordance with a regulation proposed in 1910 by the Committee of Chauffeur-Mechanics and approved by the Prefecture of Police.

The Serb-Croat-Slovene State.

Owing to its geographical situation, the Serb-Croat-Slovene State is an extremely important centre of international communication. Owing to its situation and to the direction of its valleys, through which large navigable rivers flow, all the main international lines either from East to West or from North to South pass through its territory. The Serb-Croat-Slovene Kingdom therefore holds an exceptionally important position as regards international communication, and serves as a junction between the East and West and North and South.

The most important international lines, namely :

North America - London - Paris - India ;

North America - Atlantic Ocean (Bordeaux) - Black Sea (Odessa) ;

The Scandinavian countries - Berlin - Prague - Belgrade - Constantinople ;

Petrograd - Warsaw - Budapest - Belgrade - Salonica - Cairo pass through the Serb-Croat-Slovene Kingdom. The most important European river, from an international point of view, namely, the Danube, and its tributaries, the Drave, the Tisza and the Save, which are all navigable waterways of considerable importance, and also the Morava and the Drina, pass through the Serb-Croat-Slovene Kingdom, the former from West to East and the latter from North to South.

These conditions prove the importance of the Serb-Croat-Slovene Kingdom from an international point of view, and make it a *transit country of the first importance*. If its varied and abundant natural resources, its picturesque scenery and its favourable climate are also taken into consideration, it is easy to understand the importance of the kingdom both from the general political and economic point of view and also owing to its position as a boundary country between East and West.

I.

RAILWAYS.

General Remarks.—Properly speaking, there are at the present time no railway systems in the Serb-Croat-Slovene Kingdom, but only railways. The reason for this is that the former Austro-Hungarian Empire, being desirous of keeping Serbia quite separate from her kinsmen under Austrian rule, did not permit Austrian lines to connect with those of Serbia, with the exception of the Belgrade line. For the same reasons, Austria-Hungary maintained a state of separation between the various Serb-Croat provinces under its rule and did not allow any connection between them. Moreover, the former Empire made all railways converge on its capitals, Vienna and Budapest, and for this reason the railways of our provinces which were under Austro-Hungarian domination run almost entirely from South to North. The centres of economic and political life were shifted after the peace, and the direction of communications changed with them; the tendency is now towards a re-establishment of communications from West to East; to this, Austro-Hungarian policy had been opposed.

As regards Serbia in particular, the state of political and economic isolation in which she was kept by the former Austro-Hungarian Monarchy, the lack of capital in the country, and the considerable difficulties arising from her geographical conformation, have been serious obstacles to the development of the railway system.

The first railway line in Serbia, that from Belgrade to Nish, about 250 kilometres in length, was opened on September 3rd, 1884. Active economic expansion, together with the development of this system, only began about ten years before the world-war, when Serbia was beginning to free herself from the economic and political influence of the Central Empires.

The whole of the lines at present working in the Kingdom of the Serb-Croat-Slovenes are divided between the four local administrations, with headquarters at Belgrade, Serajevo, Zagreb and Soubolitz.

In Working.

(a) Normal- or narrow-gauge railways owned by the State or private companies, 7,955 kilometres.

(b) Departmental lines owned by private companies or for industrial purposes, 1,000 kilometres.

Under Construction or Proposed.

(a) Normal-gauge lines, 7,108 kilometres.

(b) Narrow-gauge lines, 2,351 kilometres.

I. BELGRADE ADMINISTRATION.

A.—*In 1914 :*

In 1914 Serbia possessed :

1. State Railways :

(a) Normal gauge :

In working	928 km.
In construction	537 km.
Proposed.. . . .	1,385 km.

(b) Narrow gauge :

In working	454 km.
Under construction	128 km.
Proposed	1,299 km.

(c) Funicular railways :

In working	17 km.
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2. Departmental Railways and Railways owned by Private Companies :

(a) Normal gauge :

In working	216 km.
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(b) Funicular Railways :

In working	49 km.
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The whole of the railways in Serbia were valued at pre-war prices as follows :—

(a) In working	Fr.	303,686,000
(b) In construction	»	49,014,000
Total.	Fr.	352,700,000

The railways in Serbia are State-owned, with the exception of a very small part of the Departmental and privately owned railways. They are under State administration and are of a uniform type.

B.—*In November 1918 after the Armistice.*

(a) *The Causes of Destruction.*—The principal line is the Belgrade-Nish-Salonika, Nish-Constantinople, which follows the valley of the Morava and afterwards that of the Vardar. The whole of the military operations for the conquest of the Balkans were carried on in this direction, as well as the final Austro-Hungarian, German and Bulgarian invasions. The

importance of this principal line, from the point of view of military operations, arises from the fact that Serbia had no transversal line (having never been able to obtain one) to unite her with her kinsmen on the Western frontier ; such a line might have served, if necessary, to relieve congestion on the principal line.

The enemy was scrupulously careful in the upkeep of this line as long as he required it, and systematically destroyed it when he realised that he could no longer make use of it.

(b) *The Destruction Itself.*—As regards the destruction, it was carried out mathematically in every respect. All the bridges, whether of stone or iron, even those that were extremely short, were mined and destroyed at the last moment of the retreat ; moreover, the armoured trains, when withdrawing, destroyed the track by means of heavy shell. All engineering works, embankments, ramps, protecting walls and approaches to tunnels were similarly destroyed by mines. The rails were mined at every second joint and destroyed by railway troops, so as not to leave a single rail intact throughout considerable distances. Points and turntables were removed or blown up with dynamite ; stations, stores, warehouses, loading platforms, water stations and reservoirs were ransacked and afterwards destroyed or burnt.

(c) *State of Affairs after the Enemy's Retreat.*—The enemy, alas, was entirely successful in leaving the Serbian railway system in a complete state of devastation after his retreat, but he did not secure his principal aim, which was to hold up the offensive of the Serbian and Allied Armies, and to save Austro-Hungary from defeat.

Owing to the rapid advance of the Serbian and Allied Armies and the necessity for placing the liberated territories under military control, Serbia was deprived of all military aid for the re-establishment of her railway system, and was left alone to deal with the numerous difficulties with which she was faced. Her male population was entirely mobilised for war purposes, deported, or else destroyed by the enemy ; the country had been devastated and pillaged during three years of occupation, and finally during the retreat ; all that still remained intact was delivered over to pillage, fire and destruction. Moreover, the Allies were far away, and there was no direct communication with them. The terms of the Armistice with Austria, Hungary and Bulgaria might to a certain extent have improved this state of affairs—and Serbia undoubtedly had a right to expect this — but they were drawn up under the first impulse of victory without the assistance of experts, and without a knowledge of facts and circumstances, and thus left Serbia in a desperate state, and caused her the most profound disillusionment.

In such circumstances, and after such sacrifices, it is evident that the repair of the whole railway system was a task of the utmost difficulty. The entire lack of means of communication, together with the prevailing poverty, might have given rise to serious troubles within the country and

have driven it into anarchy had the people not maintained an unshaken confidence in their allies, a profound faith in the justice of their cause, and that high *moral* which, in spite of trials and sufferings, led them to victory.

C. Present Conditions.

Railway communication has been re-opened on all lines. All bridges have been repaired provisionally by means of wooden constructions. The trains go very slowly, about 25 km. an hour, owing to the bad state of the lines, and only by day, it not having yet been possible to replace the signal system and telephonic communication. Moreover, the personnel is insufficient, and all the sleepers need replacing owing to their bad state.

Urgent Work Required.

(1) All the iron constructions, totalling about 12,000 tons, need replacing. These constructions were first ordered from England in June 1919, and when that country could not carry out delivery, half was ordered in Austria and the other half in Czecho-Slovakia. Unfortunately, delivery is taking place very slowly owing to economic difficulties and labour troubles in those countries. The pile-work of the bridges, which is at present of wood, must be replaced by permanent constructions of reinforced concrete. (2) Signals must be installed in all stations. (3) The rails in the stations themselves (for the moment only two lines of arrival and departure have been reconstructed) need to be re-laid. (4) Telegraphic and telephonic communication must be restored.

Future Work.

The execution of the programme of works to be undertaken in our now united country is seriously hindered and complicated by the fact that all of the work originally carried out by Austria-Hungary is in direct opposition to this programme.

The Austro-Hungarian Monarchy, as regards its railway policy, was always guided by the two following principles:—

(1) To isolate Serbia, firstly, from her kinsmen who were living under Austro-Hungarian Government, and, secondly, from other nations.

(2) To make all railway lines in the territory of our Serb, Croat and Slovene kinsmen in the former Monarchy converge on Vienna and Budapest.

The programme of work now requiring execution is:

The final repair of all the lines in Serbia which at the present moment have, with much difficulty, been provisionally restored to working condition:

The establishment in the Serb-Croat-Slovene Kingdom of a definite system corresponding with the needs of the country and connecting it with its great allies and friends of the present day. Both of these tasks are considerable ones, but our nation rightly believes that she will accomplish them — first, by virtue of her incontestable right to secure reparations from the enemy, secondly, thanks to the sincere collaboration and generous assistance of her allies and of friendly countries.

We may mention here some of the principal lines of an international character which it is proposed to construct in the near future. (1) The so-called "Adriatic" line from St. Jean-de-Medine-Scutari-Nish-Prahovo towards Bucharest-Odessa, which it has long been proposed to construct, and which is the longest line proposed, passes through Serbian territory; the second, Nish-Prahovo, had been completed shortly before 1914.

With a true realisation of its interests and those of all nations, Serbia has long been working for the accomplishment of the Atlantic-Black Sea line, over which at the present time the Simplon-Orient express passes. In 1904, in particular, Serbia passed a law for the construction of a line Belgrade-Pozarevat-Brza, Palanka (Serbo-Roumanian frontier), and at the beginning of 1914 an agreement had been entered into with Roumania for the crossing of the Danube at Brza Palanka, and also to ensure connection with the Kraiova-Bucharest-Odessa line.

Belgrade-Serajevo-Adriatic (Klek ow Splet) line to connect the capital with the Adriatic and the countries beyond.

Rolling Stock.

The whole of the rolling stock which Serbia had been able to rescue during her retreat in 1915 was handed over by her to her allies at Salonika for their use. It was only finally restored to her in 1920 in a much-damaged condition.

The rolling stock taken by the Bulgarians was not restored until the end of 1920, and was in bad condition and much damaged.

Serbia was not fortunate in the question of rolling stock taken from Austria-Hungary.

At the time of the collapse of Austria-Hungary, the Austro-Hungarian authorities established in Serbia and other Serbian countries (Bosnia, Herzegovina, Dalmatia, the Banat, Bakka, Slavonia, Croatia) used the best rolling stock in their retreat for the evacuation of many officials' families, of their own families, and of stolen articles, private property and State property.

For this reason the Serbian Army only had the worst of the rolling stock.

Owing to these various special circumstances, the rolling stock possessed by our country is of the very worst quality and in very bad condition. The railway administration does not possess the exact figures regarding its rolling stock, but in any case there is a great shortage.

There are no means of carrying out repairs, as all the workshops have been destroyed or removed. Efforts are being made to have repairs executed in neighbouring countries, such as Austria-Hungary and Czecho-Slovakia, but many difficulties and delays have arisen, because, in addition to excessively high prices, all these countries require raw materials and food for the workers.

Production and Consumption of Coal.

All the mines in Serbia have been burnt or destroyed.

The usual cost of one ton of coal before the war was 10 dinars, and in 1920, 120 dinars.

Rates.

Immediately after the restoration of railway communications, which had been interrupted during the war, the rates for the transport of passengers and goods were increased. This increase in rates, as compared with pre-war prices, is :

- | | |
|--|-------|
| (1) For first, second and third-class passengers | 150 % |
| (2) For passenger luggage | 170 % |
| (3) For goods : | |
| (a) Maximum rate for goods by express | 200 % |
| (b) Minimum rate charged for coal and wood fuel . . . | 150 % |
| (c) Corn, wheat and fruit | 700 % |

These charges were again raised in August 1920, except in the case of corn, wheat and fruit.

Further increases are expected, as the present rates do not even approximately cover working expenses.

Financial Situation.

The financial situation is very bad, and receipts cover scarcely one half of the working expenses. This is in consequence of the railways which have been destroyed, and of the lack and high cost of labour and material.

The premature introduction of the eight-hour day in an agricultural country such as ours has resulted not only in an excessive rise in prices but also in an absurd situation. On lines which have not been repaired sufficiently to enable traffic to be restored, and on local lines on which only two trains run in 24 hours, three eight-hour shifts of employees and mechanics have to be employed in order to run only these two trains. This is a striking example, which needs no comment.

II. ADMINISTRATION OF THE ZAGREB RAILWAY.

State of the Railway.—The railways included under this administration during and before the war, until November 1918, were partly under the Hungarian and partly under the Austrian administration.

This administration included the railways in Croatia, Slovenia and Dalmatia. The length of lines amounted to 2,500 kilometres.

Main Lines.

The *Drnje-Bakar* line is a main line, and is available for the same amount of traffic as before the war. Trains may be run on this line at a speed of from 70 to 80 km. an hour. The line is in the same condition as before the war.

Sisak-Vinkovci line, over which the Simplon express passes, was built as a second-class line. It has not yet been brought to its pre-war state, but it has been improved since the revolution to the extent of 50 %. On this line trains run at a speed of 70 km.

The traffic capacity of the local lines has decreased owing to rotted sleepers, but they have been improved since the war to the extent of 25 %. 30 to 40 % of these second-class lines are in perfect condition, and the maximum speed is 40 km. They are in good condition from the technical point of view, but their iron-work requires painting, as this has not been done either before or during the war.

The railways in Slovenia are more or less in the same state as before the war. Indeed, their importance has grown, and some of their stations had to be enlarged during the war.

Most of the Dalmatian railways are under Italian administration; we can express no opinion with regard to them.

Works Urgently Required.—Rotted sleepers renewed, and the track ballasted with gravel to fill up the cavities.

Reconstruction Works Required.—Wooden bridges to be replaced by bridges of iron and reinforced concrete (Osijek, Kapela, Batrina line). Gravel to be replaced by broken stone ballast (Sisak-Brod line). Points of obsolete type to be replaced by points of modern type (Sisak-Vinkovci line).

Improvements.—The second-class line Sisak-Vinkovici to be made into a first-class line by replacing rails of 33.25 and 24.5 kg. by rails of 42.8 kg. On the local line Dugoselo-Novska rails of 23.6 kg. to be replaced by rails of 34.5 kg.

Construction of New Lines.—The lines Jospic-Knin and Krupa-Bibac are in course of construction. The following lines have been proposed, but their construction has been postponed :—

- 1) Bibac-Zrmanja ;
- 2) Murska Sobota-Ljutomer-Ormoz ;
- 3) St. Janz-Sevnice ;
- 4) Dugoselo-Rugvice ;
- 5) Rogatac-Krapina ;
- 6) Varazdin-Koprivnica.

Fuel.—The following data show the consumption of fuel and also the price per ton :

Consumption of fuel in . . .	1913 Tons	1918 Tons	1920 Tons
	351,250	475,750	494,700

1913.—In this year the Zagreb Administration mostly used English coal and other coal of high calorific power.

1914.—In this year, English and Czech coal was used, also coal from Trifail, and about 40 % native lignite or Trifail coal for expresses and mail trains, amounting in all to 168,000 ; also 120,000 tons of Peschout coal, the rest lignite.

PRODUCTION AND CONSUMPTION OF COAL, CHARCOAL AND COKE, 1913.

Gross Production.	Coal.		Charcoal.		Coke.	
	Per Month.	Per Year.	Per Month.	Per Year.	Per Month.	Per Year.
Serbia	24,724	296,640	3,400	40,800	—	—
Bosnia	70,095	841,140	—	—	—	—
Croatia	16,825	201,911	—	—	—	—
Slovenia	128,436	1,541,240	—	—	—	—
Dalmatia	6,830	81,961	—	—	—	—
Total...	246,906	2,962,372	3,400	40,800	—	—
Consumption at the mines.....	17,284	207,408	240	2,880	—	—
Gross production.	229,622	2,755,404	3,160	37,920	—	—
Imported from the Peschout basin.	—	—	28,925	347,100	—	—
From the Hungarian basin.	—	—	1,511	18,132	—	—
— —	12,020	144,240	—	—	—	—
— —	—	—	3,678	44,136	—	—
From Roumania.	—	—	8,528	102,336	—	—
— —	—	—	1,500	18,000	—	—
— Istria	—	—	5,535	66,420	—	—
— Czecho - Slo- vakia....	—	—	13,833	165,996	1,738	15,656
— Kladno (Cz- Slov.)....	—	—	3,535	42,420	—	5,200
— Brux (Id.)...	5,000	60,000	—	—	—	—
— Upper Silesia	—	—	13,406	160,872	1,525	18,300
— Westphalia..	—	—	4,706	56,472	—	—
— England....	—	—	7,526	90,312	1,916	23,000
— America....	—	—	—	—	—	—
Total...	17,020	204,240	92,683	1,112,196	5,179	62,148
Extraction, im- portation.....	246,642	2,959,764	95,843	1,152,150	5,179	62,148
Exportation.....	19,000	228,000	—	—	—	—
Remainder for consumption..	227,642	2,731,704	95,843	1,150,116	5,179	62,148

Coefficient of satisfaction

Total coefficient of satisfaction

IN 1913 AND 1920 IN THE SERB-CROAT-SLOVENE KINGDOM.
1920.

Coal.		Charcoal.		Coke.		
Per Month.	Per Year.	Per Month.	Per Year.	Per Month.	Per Year.	
19,304	231,648	2,300	27,600	—	—	The price was 10 din. in 1913 and 120 din. in 1920.
65,806	789,672	—	—	—	—	
28,016	336,192	—	—	—	—	
99,632	1,195,584	—	—	—	—	
—	—	—	—	—	—	
212,758	2,553,096	2,300	27,600	—	—	
23,403	280,836	300	3,600	—	—	
189,355	2,272,260	2,000	24,000	—	—	
—	—	23,183	265,596	—	—	
—	—	—	—	—	—	
—	—	—	—	—	—	
—	—	—	—	—	—	
—	—	—	—	—	—	
—	—	—	—	—	—	
—	—	—	—	—	—	
—	—	400	4,800	300	3,600	
—	—	—	—	—	—	
—	—	—	—	—	—	
—	—	—	—	—	—	
—	—	—	—	—	—	
—	—	250	3,000	—	—	
—	—	—	—	250	3,000	
—	—	22,783	273,306	550	6,600	
189,355	2,272,260	24,783	297,396	550	6,600	
—	—	—	—	—	—	
189,355	2,272,260	24,783	297,396	550	6,600	
$\frac{227,642}{189,355} = 63\%$		$\frac{95,843}{24,783} = 25\%$		$\frac{5,179}{550} = 10\%$		2 tons charcoal = 1 ton.
$\frac{113,821 + 95,843 + 6,882}{94,677 + 24,783 + 731} = \frac{216,552}{120,191} = 55\%$						
						3 tons coke = 4 tons coal.

The number of locomotives in working order :	1913	1918	1920
a.) Expresses and mail trains	130	42	61
b.) Goods trains	193	146	215
c.) Various	42	30	32
Total	365	218	308

The total number of kilometres covered :

1913	1918	1920
12,758,084 km.	11,660,063 km.	10,464,033 km.

The number of locomotives required in the near future, and the deficit which must be covered either by the repair of damaged locomotives or by the purchase of new locomotives :—

The number of locomotives required	394
Deficit	86

Financial Situation.

The financial situation of this railway system is as follows :

a) *Pre-War Position.*—Before the war, all the railways which are now under the Zagreb Administration, formed part of the former Austro-Hungarian railway system. Their financial position cannot be considered except from the point of view of one entire railway system ; the financial position of the whole system must be taken as a whole in order to ascertain how much appertains to each individual line in proportion to its length.

It will be understood that on a calculation on this basis only an approximate table can be given.

b) *Situation immediately after the Armistice.*—As a result of the greatly reduced number of trains, and also of the completely disorganised administrative service, the receipts had become very small. For this reason working expenses have had to be covered partly by the State and partly by bank loans ; about 18 millions were lent by Zagreb and 15 millions by Ljubljana.

As the situation became more normal, receipts began to increase, but not in proportion to expenses.

Financial equilibrium has only been established up to a certain point as a result of a fresh increase in rates.

c) According to the provisional budget for the years 1919 to 1920 (up to May 31st, 1920), the total receipts amount to	272,023,769 crowns
Expenditure	236,669,322 "
Difference	35,354,447 crowns

Apart from the total expenses enumerated above, 150 million crowns were paid to the staff as supplementary wages to meet the increased cost of living.

This supplement for increased cost of living now amounts to 355 millions for the staff, and 220 millions for the workers.

III. SUBOVITZA ADMINISTRATION.

The length of lines under this administration is about 2,000 km.

1) *Pre-War Condition of Railways.*—Before the war, the railway system under this administration belonged to Hungary and was in perfect condition from the point of view of communications; the train service was regular and punctual.

During the war a new line was constructed between Scutari and Tchoka, utilizing the Scuta Bridge over the Tisza. This line, which is a temporary one of standard gauge, is 8 km. long; nearly all the stations have been enlarged, and a station has been built at Novi-Sad.

2) *Condition of Railways during the War until the Armistice.*—During the war the condition of these railways considerably deteriorated. The rolling stock was sufficient, though not more than sufficient, to maintain the traffic.

3) *Present Condition of Railways.*—During the Armistice, as rolling stock and plant were both completely lacking, the up-keep of the railways became more and more difficult and their condition deteriorated even more. The chief causes of the difficulty of maintaining the railways were the lack of sleepers and ballast. It may further be pointed out that during the war the amount of work for purposes of maintenance and construction on the railways was negligible.

4) *Works Urgently Required.*—The following works are urgently required

for the up-keep of the railways; renewal of sleepers, substitution of special sleepers on bridges, re-ballasting and re-painting.

Traffic.

Number of trains running daily before the war	445
After the war in 1918	105
After the establishment of the administration in 1920	206

As a result of the lack of coal, communications were brought to a standstill in the Banat and Backa.

The amount of passenger and goods traffic is not known at present, as there are no statistics available.

From January 1st to June 30th, 1914, the consumption of coal on this system, the length of which is about 1,600 km., amounted to about 95,937 tons.

As the railway system under the Subolitzza Administration is now about 2,000 km., it may be calculated that the consumption of coal would amount to 120,000 tons in six months or for a whole year 240,000 tons. The price of coal at that time was 12 crowns per ton.

In November and December 1918, immediately after the Armistice, about 16,174 tons of coal were consumed on the railways under this administration.

The amount of Peschout coal now required by the present traffic is 135,000 tons per annum, and when the traffic is increased, 180,000 will be required.

IV. SARAJEVO ADMINISTRATION.

This administration includes the railways in Bosnia-Herzegovina.

1) *The Rail System and the condition of the Lines before the War.*—The attached table gives the length of the lines constructed or in operation in Bosnia-Herzegovina.

According to this table, the number of kilometres in operation is as follows :—

a) State railways	935,443 km.
b) Railways administered :	
1) Local electric railways at Sarajevo	5,648 »
2) Mine railways Podlugovi-Vares	24,388 »
3) Railways of Southern Dalmatia	58,544 »
Total	1,024,023 km.

These lines were in perfect condition before the war.

2) *Events During the War and Condition of Railways before the Armistice.*—At the beginning of the war many iron bridges were blown up on the line Sarajevo-Uvac. These bridges were temporarily repaired in October 1915

in order to establish communications at once. They were afterwards permanently repaired so that at the end of the war they were in perfect condition.

Towards the end of the war, several bridges were blown up on the line Medjeda-Vardiste. Bridges were also blown up on other lines towards the end of the war.

After the Armistice, the railways of Southern Dalmatia, which are 58,544 km. long and which were provisionally controlled by the Sarajevo Administration, became the property of the State Railway Administration of Sarajevo.

These lines were in perfect condition. Their service was absolutely regular, except in the case of the Visegrad-Vardiste line, to which we have referred above.

Work Carried Out since the Armistice up to the end of 1920 ; Present condition of lines.—Since the Armistice and up to the end of 1920, most of the bridges destroyed have been rebuilt. Lines have been repaired and a large number of rotten sleepers renewed. During this period the lines have been in perfect condition and a regular service has been carried out.

Permanent Reconstruction Work to be Carried Out.—In order that the line should be permanently rebuilt, all the bridges which have been abandoned must be repaired, temporary constructions replaced by permanent constructions and a large number of sleepers renewed.

Traffic.—Passenger traffic, soldiers only.

In order to obtain an idea of the extent of this traffic we have based our calculation as regards the years 1913, 1918 and 1919, that is to say, for the present time, on the annual reports for 1919-20 and the provisional reports up to the end of November 1920, that is, for six months from June to November 1920.

The report for 1918-1919 only includes eleven months, as the financial year was fixed from July 1918 to the end of May 1919. The financial year counts from June 1st, 1919, to May 31st, 1920. The tonnage may be calculated in the same way, since, for statistical reasons, calculations should not be made by separate months.

Traffic Returns.

	1913	1918-19	1919-20	From June 1st to end of No- vember 1920
Number of passengers	3,360,508	2,667,062	2,896,335	1,648,838
Tonnage	1,751,362	668,069	1,006,812	518,107

Fuel.

Coal and wood, tonnage	236,082	259,021	234,961	134,902
Price per ton, crowns	7.6	33.5	112.1	311.7

The whole of the coal consumed comes from the mines in Bosnia, Herzegovina, Krek, Zenica, Zgosca, Breza and lately, from Mostar.

Wood fuel, used for lighting purposes, has also been included in these figures, but as compared with coal, the quantity used was too small to be taken into consideration.

Financial Situation (in crowns).

	1913	1918-1919	1919-20	From June 1st to end of November 1920
Receipts	20,480,699	53,527,648	134,063,516	129,976,460
Expenditure	15,307,495	61,308,686	155,504,975	157,368,284
Balance	5,173,204			
Deficit		7,781,038	21,441,489	27,391,824

The increase in receipts for 1919-20 is due to the increase in charges and also from the increased tonnage as compared with the year 1918-19; moreover, the average distance covered, in the case of goods traffic, is greater than during the preceding years.

Expenses have increased owing to the rise in the price of material, particularly of fuel, and owing to increase in the wages of the staff.

II

NAVIGABLE RIVERS AND CANALS.

The Serb-Croat-Slovene Kingdom possesses a large number of navigable rivers and canals. The length of these is as follows:—

No.	Basin of the Black Sea rivers	Length of rivers		
		<i>a</i> Navig. length at present	<i>b</i> Navig. length projected	Total <i>a + b</i>
1	<i>Danube</i> Average length of the channel excluding branches.....	522	—	522
2	<i>Save</i> From its confluence with the Danube to the mouth of the Kupa.	600	—	—
	<i>Save</i> From the mouth of the Kupa to the frontier of Styria	—	135	735
3	<i>Kupa</i> From its confluence with the Save to Pokupsko	60	—	—
	<i>Kupa</i> From Pokupsko to Karlovac..	—	75	135
4	<i>Bossut</i> Tributary of the Save	40	—	40
5	<i>Spacva</i> Tributary of the Bossut	21	—	21
6	<i>Studva</i> Tributary of the Bossut	18	—	18
7	<i>Drave</i> From its confluence with the Danube to the frontier near Barc ..	160	—	—
	<i>Drave</i> From the frontier at Drne	—	69	229
8	<i>Tisza</i> From its mouth as far as Segedin	170	—	170
9	<i>Tamis</i> From its confluence with the Danube to Pancevo	3	—	3
10	<i>Morava</i> From its confluence with the Danube to Stalac	3	214	217
	Total...	1,597	494	2,091

1. The length of the right bank of the Danube from Baia to the mouth of the Timoc amounts to 637 kilometres ; the length of the left bank from Baia to Bazias is 408 km. ; the length of the navigable portion is therefore 522 km.

2. The Kupa is only navigable for barges of the usual Danube type from its confluence with the Save as far as the station of South Sisak (4 km.). Small vessels only can reach Pokupsko.

3. The Drave is always navigable for barges of the normal type as far as Belisce (50 km.) ; it is navigable as far as the frontier and Barc (151 km.) for the same vessels when the water level is sufficiently high.

4. The basin of the Adriatic Sea only contains one river, the Neretva, navigable for some 25 km. ; from its mouth.

No.	Canals.	No. of locks	Length in kms.
1.	King Peter Canal from Bedzan (*) to Turski Becej.	6	123
2.	Crown Prince Alexander Canal from Mali Stapar to Novi Sad	4	70
3.	Canal de Bega, from its confluence with the Tisza to the Roumanian frontier.	4	88
	Total.	14	281

The Navigability of Rivers.

Throughout the course of the Danube within the kingdom there is always a sufficient depth for the passage of boats and barges fully loaded. The minimum depth recorded on October 2, 1915, at a shallow near the mouth of the Tisza, was 26 m.

The only portion of the Danube where lateral canals have been constructed to allow of the navigation by vessels of 2 m. draught, is that known as the Iron Gates, which lies in the above-mentioned section between

(*) The canal is fed by a special canal which begins at Baia (Sugovica) and runs as far as Bezdán.

O-Moldova and Turn-Severin. The chief of these canals is near the village of Sip. Unfortunately, when the work was completed, fresh obstacles were found in the sections which had not been improved between the canals; these reduced the available depth to 60 cm., when the water falls as low as the zero mark of the hydrometric scale at Orsova.

The next most important river after the Danube is the Save. Navigation on this river is often suspended during August and September, as soon as the level of the water falls below the graduation + 1.00 of the hydrometric scale at Mitrovica, because in these circumstances shallows appear, as at Misar near Sabac, which cannot be passed even by shallow-draught tugs (11-12 dm.).

The conditions on the Drave are identical, and navigation on that river is more frequently interrupted. That is also the case on the Tisza, but in this case navigation is most frequently interrupted by ice.

As regards canals, the navigable depths of the King Peter Canal and the Crown Prince Alexander Canal (which unite at Mali Stapar) vary between 1.55 m. and 1.70 m. (in November 1920 it was as low as 1 m. 30); the width at the bottom is 17 m. The locks are of different sizes, the largest having a length of 70 m., the smallest 42 m. and 60 m.

The greatest width is 13.97 m., the smallest 8.42 m. The navigable depth of the canal of Bega is 1.50 m. to 2 m., the width at the bottom is 12 m.; the locks are from 60 to 73 m. in length and 10 m. in width.

Experience has shown that the most suitable type of barge, owing to the changes in the height of the water and the strength of the current, is the 650-tons type (65 wagons). The barges are loaded up to 100 % of their capacity (except for reasons of a commercial nature), throughout the course of the Danube within the frontiers of the S. C. S. State. The load is, however, usually reduced to 60 % (about 400 tons) when passing over rapids, or when the current is strong, and to 30 % (200 tons) in periods of low water.

As regards the duration of navigation, it is usually interrupted by ice during the winter, i.e., from mid-September till the middle or end of February (60 to 75 days) on the Danube and the Tisza. In practice the boatmen reckon on 250 days' navigation. Winter and ice do not as a rule hamper navigation on the Save and the Drave; ice is found on the Save on an average one winter in fifteen; but low water may interrupt navigation from mid-July until the middle or end of September (75 days). In practice, they reckon on 250 days of navigation per year on the two last-named rivers; the duration is the same for the Danube and the Tisza, but the periods are different.

Winter ports for sheltering vessels against ice are situated as follows:

On the Danube.

1. Sougovica, near Baia, for 50 vessels.
2. Baracka, near Bezdan, for 120 vessels.
3. Novi Sad, for 100 vessels.
4. Pancevo, for 90 vessels.

On the Save :

5. Bezinaja, near Zemum, for 170 vessels.
6. Ada Tsiganlija, near Belgrade, for 210 vessels.

The latter figure is considerably increased by the construction of new ice-breakers.

On the Drave :

7. Osjek, for 60 vessels.

Making a total of 705 vessels.

The entire fleet of river craft of the S. C. S. State can take shelter in these ports, but the number could be still further increased by making use of the winter port of Kovin, which is not yet in good order.

*Technical Works to be carried out on the S. C. S. River System.**A.—Works for Upkeep.*

1. *Permanent Works.*—During the last year various works have been carried out for the protection of the banks ; the chief are those near Gombos (below the confluence with the Drave) ; 10,000 cubic metres of stone—involving an expenditure of 350,000 din—were employed. In addition to the excessive cost of all works of this sort under present conditions, the expenditure has been increased by the necessity of carrying out not only the ordinary maintenance work of these structures, but also their repairs, with a view to restoring them to the condition in which they were (in 1914) at the beginning of the war.

2. *Dredging.*—The same remark holds good with regard to dredging. The amount of soil dredged annually in the Danube, the Save and the Tisza may be reckoned at from 1,200,000 to 1,500,000 cubic metres, about 100,000 cubic metres of which come from the winter ports, but this is an average estimate, which should be increased three-fold or four-fold in the case of the winter ports for the next year or two.

3. *Removal of Tree Trunks.*—This work is of the highest importance on the Danube and its tributaries. As an instance, the Save is obstructed by tree trunks below its confluence with the Drina and the Bosna ; on the Drave, trunks are found at 80 places. Between Stalac and the mouth of the Morava as many as 2,000 tree trunks have been found, forming a complete block to navigation.

4. *Buoying of Channels*.—Ascheme for buoying, to permit night navigation on the Danube, the Save, the Tisza and the Drave is now being carried out. The complete scheme for the Danube provides for 101 fixed signals and 154 floating buoys, the greater part of which are lighted. Efforts are being made to obtain a better system of lighting on the section Zemun-Belgrade, in which 8 floating buoys have already been placed.

B.—*New Works*.

1. *Regularisation of Rivers*.—The regularisation of the Middle Danube was undertaken by the Hungarian Government only. The most insecure places are at present at the mouth of the Tisza, near Vaiska, and in the neighbourhood of Veliko Ostrovo (below its confluence with the Morava). The approximate cost per kilometre would be two million dinars. The schemes previously drawn up are now obsolete; steps are being taken to prepare fresh ones.

The regularisation of the Save is of the highest importance. Steps are already being taken to form a waterway from Belgrade to Zagreb; the minimum depths on this route are variable. For the present it is only possible to fix a depth of two metres below the zero of the hydrometric scale as the minimum depth of the Save between Belgrade and Bosanski Brod.

In view of the heavy traffic which already exists over this section (700,000 tons in 1920), it should be possible, by moderate charges, to cover the necessary expenditure for the execution of these works.

A very interesting undertaking is the reopening of the Morava for navigation; this should prove possible on the section from the mouth of the Stalac (217 km.) with fairly simple and limited means; this work is already in hand.

2. *Construction of Dykes against Floods*.—Hundreds of kilometres of dykes have still to be made in order to complete the canalisation of the Save, and about 400 km. to protect the valley of the Great Morava. A wide stretch of marshy ground borders the Danube opposite Belgrade, and it is very difficult to calculate, even approximately, what capital would be required to execute the most urgent works.

The importance of these works is sufficiently illustrated by the fact that more than 40 companies have been formed for the purpose of protecting this land against inundation, and the area of land already protected by dykes is one million hectares.

3. *New Canals Projected*.—The new canals projected are three in number:

(a) *The Voukovar-Samac Canal*, with a length of 56.5 km., and two locks at the ends; the expenditure necessary was estimated before the war at from 24 to 28 million crowns.

This canal would reduce the distance between the Danube above Voukovar and the Upper Save by 420 km.

(b) *The Danube-Adriatic Canal.* The projected course of this canal is as follows ; the Save as far as Sisak ; the Kupa, as far as Carlovac ; the canalised Kupa as far as Velika-Kapela, thence by a navigable tunnel, 24 km. in length, to the the Adriatic. The expenses, according to the draft scheme, will amount to 400 million dinars.

(c) *The Morava-Vardar Canal.* This canal, 640 km., in length, will be formed partly by the lateral Marava Canal and partly by the canalised Vardar. As the height of the ground at the summit level reach is 460 metres, the canal requires a great number of locks.

The estimate of expenditure has not yet been completed.

The Condition of the River Ports before the War.

The ports situated in the territory of the S. C. S. Kingdom fall into two classes as regards equipment :

(1) The ports situated in the Kingdom of Serbia. Although their equipment was somewhat primitive, transhipment and unloading were carried out without much difficulty, owing to the favourable situation of the ports their approaches.

(2) The ports situated in the territory of the old Austro-Hungarian Monarchy. These ports were kept in better condition than those in Serbia. They were equipped with sheds, wharves, stores, railways, etc. The Save and the Danube were only frontier rivers for Serbia. The competition of Austria prevented Serbia from developing its communications to any great extent, and it was natural that she should give less attention and devote fewer funds to the development of her ports.

The war, which was ruthlessly conducted by the enemy, had a disastrous effect on the ports in general, and particularly on those situated in the zone of military operations, Belgrade, Mitrovitza, Chabatz, Doubravitz, Palanka, Smederevo, and Prahovo.

Condition of the Ports after the Armistice.

When the armistice came, the condition of the ports was as follows:

Port of Belgrade.—All the buildings on the river bank used as depôts offices, quarters for the waterways staff, etc., were demolished by the enemy's bombs or were burnt. A number of vessels and pontoons were sunk in the port itself. The railway bridge over the Save was demolished four times, and four of its sections were sunk in the river. In a word, the port was entirely destroyed, as also the neighbouring part of the town and the factories and shops which supply the needs of the port. In addition, the enemy destroyed, or removed, a great quantity of material which was essential for the wharves and port. All this devastation inevitably hindered navigation, repairs to vessels and the general work of the port.

All the things which had been sunk, such as bridges, piles, wharves, boats, etc., obstructed the course of the river, the right bank of which suffered, and is suffering, heavy damage.

Doubravitzá.—A considerable number of vessels was sunk in this port near the bank. These vessels obstruct navigation and access to the wharves, besides causing the sand to silt up in the river-bed the whole length of the port.

Smederevo.—This port suffered most during the retreat of the enemy who destroyed the railways and the sheds in the port.

Palanka.—This port did not suffer from the military operations, but as the war prevented carrying out drainage works, it is difficult for vessels to come alongside, owing to the sand and earth which have accumulated; this reduces traffic, and considerably increases freight rates.

Prahovo.—During their retreat the enemy destroyed all the buildings used for this port and all those situated along the quays.

Movi-Sad.—This port was also damaged by the enemy, who in their withdrawal sank several vessels and destroyed the railways of the port.

Chabatz.—During the war this port suffered greatly from bombs; the town was entirely destroyed and all the harbour buildings were completely demolished.

Mitrovitzá, on the Save.—Many vessels were sunk in this port also, and much Construction work, including the railway, was demolished.

Prospects of Full Operation.

After the enemy's retreat, and when the Armistice had been concluded, steps were taken to carry out all possible repairs in order to restore communications. These repairs consisted, as a rule, in the reconstruction of buildings and railways which had been demolished. Similarly, the river bed in the ports was cleared of various artificial obstacles. Several vessels and barges which had been sunk were refloated. After this preliminary work the ports were reopened for traffic.

Condition of the Waterways and Ports.

The restoration and improvement of the navigable waterways will involve large expenditure and much work. According to the scheme, the work may be divided into two categories: work rendered necessary by the war, and work in connection with that necessitated by the war.

The work rendered necessary by the war is to remove from the river-bed or blow up vessels which were sunk, also bridges and piles which were demolished; to repair quays damaged either by bombardment or by deviation in the course of the river; to reconstructing the buildings used in connection with the port and destroyed by the enemy, sheds, offices, quarters

for staff, etc. ; to repair the communications in the area of the port (roads and railways) ; and in general, to build everything required for the use of the ports.

The work required in connection with those mentioned above would be as follows : dredging the sand-banks which have accumulated where vessels were sunk ; canalisation of the river by means of dykes (in places where the river has been deflected from its course by sunken vessels, etc.).

All this work is urgently and immediately required, but as the programme is so extensive, progress will be governed by the financial resources available.

In addition, we must build vertical walls, wharves, ports themselves, cranes and all the machinery necessary for loading, unloading and transshipping goods, as well as elevators for wheat.

The whole programme must be carried out if we are to have ports capable of meeting the requirements of home and foreign trade.

Construction of New Routes.

Large docks should be built in each port so that each class of goods would have its special wharf, on which would be situated the special machinery required for loading, unloading and transshipping these goods, and also the sheds to shelter them.

In this connection the first ports to be considered are : Bosanski Brod, Belgrade and Prahovo.

Bosanski Brod is the centre for the export of coal by the River Save, which is the chief artery of the S. C. S. territory.

Belgrade, owing to its geographical situation, is the commercial centre of the S. C. S. State, but it has not yet got a modern port capable of meeting all its needs. There is a scheme for developing the port of Belgrade by excavating basins in which it would be possible to load, transship and unload goods at all water-levels and throughout the year.

Prahovo. This port should be constructed in such a way as to serve for the transshipment of goods from river-craft to seagoing vessels and vice-versa. This port is on the Danube, on the eastern frontier of the kingdom, opposite Roumania, and is destined to have a prosperous future. Though primitive and ill-equipped, it rendered great service to the Allied cause during the war, constituting, as it did, a connecting link between Serbia, Roumania, Russia and the west, while both the Bosphorus and the Baltic were closed to the Allies.

Condition of the Fleet before the War.

Before the war, almost the entire mercantile fleet on the whole of the Danube and its navigable tributaries was under the control of Austria-

Hungary. The mercantile fleet on the whole of the Danube (and its navigable tributaries) had a horse-power of about 130,000 and a tonnage of 1,200,000. Austria possessed 52.50 % h.p. and 50 % of the tonnage. Hungary possessed 30.50 % and 26 % respectively. The other riparian States had thus only 17 % of the horse-power and 24 % of the tonnage, and of this amount Serbia only possessed 3.75 % of the horse-power and 3.50 % of the tonnage.

This percentage represented the whole national mercantile fleet of the Kingdom of Serbia; it consisted of 16 vessels, of which 6 were for passenger traffic, with 4,860 h.p., and 106 barges (58 of iron and 48 of wood) of 43,220 tons; these vessels belong to private companies.

The mercantile fleets of Croatia, Bosnia and Voivodina were so insignificant that they are not worth taking into account. All the river communications of these countries, which to-day form part of the Serb-Croat-Slovene Kingdom, were at that time monopolised by Austria-Hungary.

In the two preceding cases no mention has been made of small coasting trade.

In order to meet competition, our fleet was maintained in the best possible condition.

Condition of the Mercantile Fleet on the Navigable Rivers of the Country.

The present size of the mercantile fleet on the navigable rivers of the Kingdom is 33 % in respect of horse-power and tonnage of the total fleet which existed on the Danube before the war; this includes the vessels captured by our army, and those handed over under the armistice agreement.

This quantity is, nevertheless, not in proportion to the capacity of our navigable rivers, seeing that one-half of the whole extent of the navigable river system of the Danube lies within our country and that, in consequence, we ought to possess one-half of the Danube river craft instead of one-third, as stated above.

The private property of our nationals consists of 24 merchant craft with 4,890 h.p., and 160 tugs of 24,698 tons total.

All the Serbian passenger craft were destroyed during the war. We are leaving out of consideration a certain number of skiffs and boats of less than 20 tons which are propelled by oars and are responsible for all local transport and communication services.

The condition of the fleet, when taken over by the Serbian Army after the armistice, was deplorable. All the vessels had been looted and scattered, and had been abandoned by their crews. The material was broken, damaged or destroyed, and on several vessels the engines had become unserviceable, either as a result of negligence or of sabotage.

All repairs were carried out in the same district by two small workshops, of which one was captured from the enemy and the other improvised. The fleet which the enemy had used during four and a-half years was found to have suffered greatly from wear.

A large workshop is under construction; work was commenced on it in the spring of 1921.

PASSENGER AND GOODS TRAFFIC.

A.—Before the War.

River navigation, as regards which a distinction must be drawn between passenger and goods traffic, was carried on within the Serb-Croat-Slovene Kingdom by navigation companies of all kinds. As has been already mentioned, nearly all communications had been monopolised by Austro-Hungarian companies. Within the territory in question, which now forms part of our kingdom, our navigation was stifled by foreign competition, and for this reason is hardly worth consideration.

As a result of immense sacrifices and super-human efforts, the Kingdom of Serbia was able, unaided, to make headway against foreign competition, and it has succeeded, at any rate, in establishing a position in the small coasting trade. The goods exported and imported by the national fleet of the Serbian Kingdom were insignificant in comparison with total exports and imports, because the national companies could not compete with foreign navigation companies of old standing and perfect organisation. For these reasons, navigation was not developed in the Kingdom of Serbia because it was limited to home trading, and because there was only one shore at our disposal. The routes followed were the Danube from Belgrade to the Timok mouth (328 km.), and the Save from its mouth as far as the Drina (177 km.)—a total of 505 km.

The passenger service was maintained by special vessels. All the navigable rivers, except the upper reaches of the Save and the Drave, were divided by agreement between the chief Austrian navigation Company, the D. D. S. G., and the Hungarian company, M. F. T. R. with a view to preventing competition between two firms over the same route. Passenger services on the Danube between Vienna and Galatz were carried on by the two companies in the ratio of 2 to 5; the route from Galatz to Subina, and also that from Vienna to Passava, was served by the D. D. S. G.; while the Tisza and the Lower Save were left to the Hungarians. The Kingdom of Serbia only got the benefit of the passenger service on the Danube and the Lower Save, while the passenger service in the interior of Serbia was entirely national, and was maintained by the vessels of the Serbian Navigation Company (Srpsko Brodarsko Drustvo). The local service from Zemun to Belgrade was shared in equal proportions between the S. B. D. and the D. D. S. G.

The goods traffic was also divided between Austria and Hungary. This traffic was highly developed and was carried on regularly over the whole navigable length of the Danube Basin. National companies, which were unable to meet competition, took only an insignificant part in Serbian export and import trade.

We have no statistics for passenger traffic before the war in the Kingdom of Serbia, as all the documents relating thereto were destroyed during

enemy occupation. It is enough to say that of the 16 vessels which made up our national fleet, 6 were for passengers and were always full, owing to the simple reason that along the whole bank of the Danube from Belgrade to the Timok mouth there is no railway running in this direction, and communications with this part of the Kingdom were only carried on by river craft. A similar state of things prevailed on the Save between Belgrade and the mouth of the Drina.

No statistics for river passenger traffic in the new territories of the Serb-Croat-Slovene Kingdom are available, as the whole of the passenger traffic on the navigable waterways was in the hands of the Austrians and Hungarians.

As regards the Kingdom of Serbia, we have partial statistics for the tonnage of goods from the period 1918 to 1912 :

Imports	215,552 tons
Exports	409,446 tons
Transit	93,378 tons
	<hr/>
	718,376 tons

The total tonnage of goods transported by boat or railway is comprised in these figures. Sixty-two per cent. applies to waterways, and thirty-eight per cent. to railways, which means that 445,393 tons were carried by water. We have no statistics for the transport of goods on waterways in the new territories of the Serb-Croat-Slovene Kingdom. The amount of goods carried by national enterprises was too insignificant to be worth mentioning.

B.—The Period immediately following the Armistice.

Until July 1, 1919, the whole navigation service was controlled by the military authorities, and was of a purely military character, both as regards the goods carried and the handling of them. Passenger and goods traffic was carried on in so far as military requirements permitted. After July 1st, 1919, the Ministry of Communications took all the services under its control, making allowance for commercial requirements, but navigation still maintained its military character to a certain degree, especially as regards the passengers and goods carried. The goods traffic gradually resumed its normal character, whilst the passenger services were made more frequent and more comfortable.

Fairly exact statistics can be supplied for passengers and tonnage carried up to October 10, 1919, although records were only carefully compiled from March 1, before which date no books had been kept, the services being of a purely military character. The results are as follows :

1,965,383 tons of goods were transported, two-thirds of which were military material.

C.—Present Day.

The present period may be considered as starting from the formation of the Serb-Croat-Slovene Syndicate, i. e., October 11, 1919. This syndicate was established on a purely commercial basis and was of a temporary nature, intended to control navigation until the final settlement of the question of the fleet which is almost entirely the property of the State.

At present there is a daily improvement and development in communications. Passenger traffic is almost exclusively controlled by the Syndicate, but other navigation companies besides the Syndicate participate in the goods traffic, together with private owners of boats. Passenger traffic is carried on on eleven routes in the Kingdom, on the Danube as far as its extreme limits, that is to say, between Vaia and Radouyevatz, and also upon the Tisza as far as Segedin. We have not a sufficient number of boats to carry on a service beyond the national frontiers.

Transport services are carried on on all the navigable rivers, canals and tributaries, not only within the frontiers, but also as far as Regensburg and Galatz.

These two services are very frequent and are increasing from day to day; almost the whole of the export and import trade and part of the transit trade is in our hands.

Statistical data, which will follow later, will show the development of navigation services.

Although our State, like the other European States and those outside Europe, has not yet been able to return to pre-war conditions, we are sure that our transport service will shortly reach the figure of $2\frac{3}{4}$ million tons—a figure which we rely upon attaining.

In this case, of course, the fleet will be improved, increased or transformed up to the most modern standards. To realise the activity of the service which will be the result, it is sufficient to compare the following statistics with the figures stated above as the tonnage to be carried by our future navigation service. These statistics are:

From October 11 to December 31, 1919, 220,739 tons of goods and 465,647 passengers were carried.

From January 1 to October 30, 1920, 1,039,271 tons of goods and about 2,250,000 passengers.

Complete statistics for the year 1920 have not yet been collected.

Financial Situation of Navigation.

Before the war, there existed in Serbia only the privileged Serbian Navigation Company, founded in 1893 with a share capital of 1,000,000 dinars, which has been raised as required to 3,000,000.

In Serbia, which at that time was small, this company satisfied all Communication requirements and produced for its shareholders a dividend of 6 %. It was under obligation to the State only in so far as the latter had guaranteed its share-holders a dividend of 6 % on the capital. This subsidy

was required not only to guarantee the revenues of the Serbian Navigation Company, but also to support national communications against the Austrian Navigation Monopoly, to safeguard commercial and industrial interests, and above all to assure the export of agrarian products which are so abundant in Serbia.

For this reason, the State had to contribute a sum almost every year in order to make up the dividend of 6 %. In 1909 and 1912 only, it was not called upon for this contribution. After the declaration of war this company sustained enormous losses. Most of its vessels were sunk and the rest confiscated ; the company had to close down its offices.

The Serbian Navigation Company, in its balance-sheet for 1919, stated its expenditure on amortisation, salaries, dividends, and sums paid out to various funds, for the financial years 1914 to 1918, and 1919 up to September 30th. According to this balance-sheet, this expenditure amounted to 6,869,270.20 dinars.

At the beginning of October 1919, the S. C. S. Navigation Syndicate was founded, to which the State contributed the prizes captured during the war. The Serbian Navigation Company and 23 banking institutes took part in this enterprise, the total capital being 2,300,000 cash, with the obligation to increase if necessary. In 1919, the balance-sheet of this syndicate (from October 10th to December 31st. showed a net revenue of 1,005,725.68 dinars and 2,669,048.04 dinars were set aside from the total revenue for the upkeep of the company's fleet. The chief revenues of the Navigation Syndicate were as follows :

Charges arising from conveyance of goods and passengers from towage, measurement, loss of time, factories, etc. : 9,801,703.87.

Expenses—Coal : 2,166,362.59 ; Salaries : 1,948,577.82 ; Repairs to vessels : 436,221.04 ; Repairs to barges and pontoons : 80,005.27 ; Amortisation payments to State : 1,979,839.80 ; to the Serbian Navigation Company : 689,208.24 etc. Total : 8,795,978.19 dinars. It will be seen from this that the balance for 1919 may be considered satisfactory.

The balance-sheet of the Navigation Syndicate for 1920 has not been finally drawn up. For this reason, the revenue for this year cannot be definitely stated.

Considering that a great part of the fleet was under repair in 1920, that traffic has very much increased, and that our river navigation is daily increasing, we shall not be wrong in presuming that the year 1920 will produce an even greater net revenue.

Consumption of Fuel.—Many years' experience has shown that a vessel works upon an average, 250 days in the year, wintering and the time required for repairs and boiler cleaning included, and also that it works an average of 11 hours per day.

The consumption of fuel varies according to its calorific value. In view of the fact that our State is making efforts to achieve independence in this direction also, by using native coal only, we will take as basis the calorific value of the Boljevatz coal which is approximately equal to that

of Peschut ; we shall denote this with the coefficient 1.00. The other kinds of native coal are of lower calorific power. We shall therefore only take into consideration those which can be used for navigation, namely :

Bosnian coal (dark), with the coefficient	0.75
Kostolatz and Slovenian coal, do.	0.50

The pre-war prices of coal and lubricants were :

Peschut coal	crs.	18.—	per ton
Bosnian coal	crs.	11.20	per ton
Kostolatz coal	din.	10.—	per ton
Machine oil	crs.	0.90	per kg.
Ragozine	crs.	3.—	per kg.
Tallow	crs.	0.80	per kg.

The present prices of these materials are as follows :

Boljevat coal	din.	304.60	per ton
Peschut coal	»	297.50	per ton
Slovenian coal	»	83.10	per ton
Bosnian coal	»	224.70	per ton
Machine oil	»	12.00	per kg.
Ragozine	»	14.00	per kg.
Tallow	»	15.—	per kg.

A ship consumes per hour (taking an arithmetic average), 8 quintals of Peschut coal or 10 quintals of Kostolatz or Slovenian coal, and it would consume approximately the following quantity of lubricant per hour :

Machine oil	1½ kg.
Ragozine	½ kg.
Tallow	¼ kg.

The total expenditure on fuel and lubricants before the European war, according to these figures, was :

16 vessels multiplied by 250 days and 11 hours = 44,000 "water" hours.

It follows that the expenditure on Peschut coal was $44,000 \times 8 = 352,000$ quintals or 35,200 tons.

$35,200 \text{ tons} \times \text{cr. } 18 = \text{cr. } 633,600.$

$44,000 \times 10$ (Bosnian) = 440,000 quintals or 44,000 tons.

$44,000 \text{ tons} \times \text{cr. } 11.20 = \text{cr. } 492,800.$

$44,000 \times 12$ (Kostolatz or Slovenian coal) = 528,000 quintals or 52,800 tons. $52,800 \text{ tons} \times 10 = \text{dinars } 528,000.$

Allowing for the fact that the dinar in 1914 was equal in value to the crown, coal cost 633,000

494,800

528,000

$1,654,400 - 3 = 551,467 \text{ din.}$

Expenditure on lubricants :

Machine oil	44,000 hours	$\times 1\frac{1}{2}$ kg.	$= 66,000 \times 0.90 =$	cr. 59,400
Ragozine	44,000 hours	$\times \frac{1}{2}$ kg.	$= 22,000 \times 3. =$	cr. 66,000
Tallow	44,000 hours	$\times \frac{1}{4}$ kg.	$= 11,000 \times 0.80 =$	cr. 8,800

Crowns or dinars. . . 134,200

Cost of coal 551,467

Lubricants 134,200

685,667

Although prices and conditions to-day are very variable, it may be estimated that we should require 380,000 tons of coal, and 900 tons of lubricants per annum, if we possessed a fleet in proportion to the number of navigable kilometres on our rivers.

III.

MARITIME NAVIGATION.

It is impossible for the moment to furnish full details as to the organisation of maritime navigation in the Serb-Croat-Slovene Kingdom, as the Adriatic question has not yet been finally settled, and because only a part of the vessels which are to be restored to our nationals have been handed over.

By a decree of September 6th, 1919, a general department, maritime navigation was set up under the control of the Ministry of Communications and of the Maritime Government of Bakar, which controls all the ports in the Adriatic.

SPAIN.

I.

RAILWAYS.

State of the lines and general upkeep : Good.

Urgent repairs requiring to be effected : None of any importance.

Final reconstitution work to be effected : Nil.

PLANT.

Improvement Work and Construction of New Lines.

The electrification of the line from the Pass of Pajares connecting the Asturias system with the interior will shortly be taken in hand.

At the same time, a new double-line track will be laid down between Palencia and Leon.

The double-track line between Irun and Madrid and a double-track line between Barcelona and Gerona are in course of construction. Work has been started on the double-track line between Valencia and Jatiba, and also on some similar lines of less importance.

The renewal of the track is being continued, the new rails having a weight of 42 to 45 kgs. per metre ; the bridges on the lines from Madrid to Seville and Toledo are being strengthened and renewed. This work is already finished, so far as concerns the lines running North and East from Madrid.

The international lines from Canfranc and Puigcerda are nearly completed. Plans have been approved for a line from Caminreal to Carinena, which will enable a direct Southern route to be established from Valencia to France via Canfranc ; and for a line from Zamora to Orense, to expedite communications between Madrid and Vigo.

The scheme for a direct line from Madrid to Valencia has been approved, while the lines Noguera-Pallaresa and Ferrol-Gijon, which are to complete the narrow-gauge light-railway system along the Cantabrian coast, are

under construction. The proposed international line crossing Spain from the Pyrenees to Algeciras via Madrid is under construction.

Marshalling stations are being built at several places which are suitable from the point of view of traffic.

Condition of the Rolling Stock.

Generally good, but there is a considerable number of locomotives, carriages, and trucks awaiting repair ; this state of affairs is due to difficulties arising from the war, particularly to the shortage of spare parts, and to the diminution in the output of labour caused by the introduction of the eight-hour day.

TRAIN SERVICE.

The passenger trains running from the frontier station of Irun are as follows :

In each direction : mixed trains, 1 ; mail trains, 1 ; express trains, 1 ; fast trains, 1 ; which, in comparison with pre-war conditions, shows a reduction of one train : the international " Sud-Express ".

Traffic on the frontier at Port-Bou is as follows :

In each direction : omnibus trains, 1 ; mixed trains, 1 ; mail trains, 1 ; express trains, 1 ; which, compared with pre-war conditions, represents a reduction of two trains, namely :

Express train, 1 ; " Rapide de luxe ", 1.

At the Portuguese frontier the express train which used to run daily only runs at alternate days, and the international " Sud-Express " has been abolished.

With reference to interior communications, the following trains have had to be taken off for various reasons, due directly or indirectly to the war :

Express trains between : Madrid and Barcelona ; Madrid and Valencia ; Madrid and Seville ; Cordoba and Malaga ; Cordoba and Cadiz ; Cordoba and Grenada ; Cordoba and Algeciras.

Traffic.

The average number of passengers carried per year for the pre-war period was 50,350,000

In 1920 it was 84,300,000

Making an increase of 33,950,000

The corresponding figures for tonnage are :

Average pre-war 29,090,223

In 1920 35,351,920

Making an increase of 6,261,697

Tariff Charges.

The increase in rates for passengers and goods was 15 %.

Fuel.

The total consumption of fuel (coal) classified by qualities, ordinary briquettes, and small, is 1,800,000 tons in round numbers. The supply varies with the different companies, and the stocks held are usually sufficient for a period of from 3 to 8 months.

During the war, nearly all the coal in use was Spanish. At present British and American coal is being increasingly used and is mixed with Spanish coal. The tendency to use imported coal is becoming more marked as more tonnage is available and freights are falling.

The average price of fuel for the large companies such as the " Norte " and " M. Z. A. ", possessing their own mines, which furnish 20 % of their consumption, is at present from 90 to 100 pesetas per ton.

For the smaller companies, who do not own mines, the cost is from 100-150 pesetas.

GENERAL FINANCIAL CONDITION OF THE RAILWAYS.

The financial condition of the different companies leaves much to be desired, owing to the enormous expenses which the war has forced them to incur.

Their receipts do not suffice to meet the cost of operation and the charges on their capital, so that they have been obliged to accept State aid in the form of loans in order to meet the increases in wages and the reduction in the working day, as well as for the purchase of locomotives, carriages and waggons.

II.**SEA AND RIVER NAVIGATION.***Condition of the Ports.*

Their condition is good, except for some urgent repairs, details of which are given below.

In the majority of ports, improvements are constantly being carried out.

Congestion.

This arises occasionally owing to the inadequacy of land transport and premises.

Condition of the Waterways.

The Spanish waterways are not of great importance. Three rivers alone, the Guadiana, Mino and Ebro, in portions of their courses, and a few sections of the Castille and "Imperial Aragon" Canals, are navigable. These waterways are in good condition.

Urgent Repairs to be Effected.

In the ports of Barcelona, Séville, Vigo, Musol and La Luz (Canaries) important work is being carried out on a considerable scale to repair damage to docks. The damage in question does not, however, prevent the utilization of these harbours.

Works to be Carried Out for Complete Reconstruction.

Nil.

Construction of New Ports and Waterways, and Improvements in Those already Existing.

As regards new ports, only a few are under construction, and these are only of local importance.

The following works for improving existing ports are worthy of mention :

Work for the exploitation of a free port at Barcelona.

Works for enlarging the port of Valencia.

Works for enlarging the free depot (Dépôt franc) of the port of Cadiz. Harbour works at Algeciras.

Work designed to improve the port of Seville by means of the "Corta de Tablada"; rectification of the course of the river Guadalquivir.

Works at the ports of Ceuta and Melilla on the Coast of Africa.

Works are also projected with the object of making the Guadalquivir navigable from Seville to Cordoba.

Condition of the Mercantile Marine.

The Mercantile Fleet at present consists of:—

52,640 tons represented by 259 steamers of less than 500 tons burthen.

840,007 tons represented by 379 steamers of over 500 tons burthen.

60,639 tons divided among 516 sailing ships of under 500 tons.

53,906 tons divided among 38 sailing ships of over 500 tons.

This makes a total of 1,192 ships with a tonnage of 1,007,192 tons.

These figures are for 1920. They show an increase of 318 sailing vessels and 10 steamers over those for 1914. The increase in tonnage is of 81,575 tons for sailing vessels and 48,325 tons for steamers.

Shipping Companies.

Regular subsidised national lines :—

Trans-Atlantic Company.

Mail lines :—

- Line to South America.
- » » North America.
- » » Central America.
- » » the Antilles.
- » » Fernando Po and the Philippines.

The above services are monthly, except for the Philippines, which is bi-monthly.

Trans-Mediterranean Company.

Mail Line :—

Line to Palma de Majorca, Minorca, Ibiza, the Canaries, Ports of Southern Spain and Spanish Possessions in North Africa.

Regular National Lines (not subsidised).

Line to North America.

Commercial lines to England.

» » Mediterranean ports, to North Africa, to Italy and to the ports of the Cantabrian Sea.

Pinillos Company.

Lines to Brezil-La Plata.

- » the Antilles.
- » the United States.

Domingo-Mumbru Company.

Regular commercial service to North America.

Bengolea Company.

Commercial lines, N. America - Mediterranean and Italian Ports.

Vasco-Andalusian Company.

Commercial lines, N. America - Southern French, Mediterranean and Cantabrian Ports.

Ramon A. Ramos Sons & Co.

Commercial lines, Mediterranean ports and N. America.

José Taya, Sons & Co.

Lines : The West Indies.

- » U.S.A.
- » England.
- » Italy.

Enrique Freixas and Company.

Commercial line, Southern French ports.

José Gelabert and Company.

Commercial line, Southern French ports.

G. Marterell and Company.

Commercial line, Barcelona to Palamós and St. Felin de Guixols (small sailing and motor vessels).

Vve Llusá & R. Masia.

Line of high-tonnage sailing vessels, U.S.A. and the North Indies.

Passenger Traffic (1920)

Number of passengers leaving the country: 225,000.

Number of passengers entering the country: 215,000.

Goods Traffic (1920)

Ports, loaded	11,000,000 tons.
» unloaded	6,000,000 tons.
Rivers and canals	300,000 tons.

Increase of Passenger Rates.

Varies between 150 and 200 % for first class.

» » 50 to 100 % for third class.

Increase of Goods Rates.

In the case of most companies, from 100 to 250 %, according to the line and class of goods.

In the case of the Trans-Atlantic Company, which is subsidised, these increases have not exceeded 50 to 100 %.

Fuel.

Total consumption amounts to 1,500,000 tons of home and foreign mineral coal. The supplies are very variable.

The net cost is from 90 to 125 pesetas per ton.

General Financial Situation.

At the present moment the shipping industry is passing through a crisis. Many ships are laid up.

III.

MOTOR TRANSPORT.

As the system of auxiliary railways in Spain is very incomplete, there have always been numerous services worked by animal traction; these have gradually been transformed into motor services. No complete statistics exist for these services, as they are of comparatively recent origin, but they certainly include at least 500 regular passenger services. Owing to the railway crisis, several of these motor services are also undertaking the transport of goods by means of motor lorries.

IV.

DEVELOPMENT OF AIR NAVIGATION.

This service is under the control of the "Ministerio de Fomento" (Public Works, Agriculture, Industry and Commerce).

Services now in Operation: Toulouse, Barcelona, Alicante, Malaga, Tangier, Rabat, Casablanca; passenger and mails. Holder of concession: Maison Latecoeur.

Bayonne to Bilbao; passengers. Holder of concession: Société Franco-Bilbao de Transports aéronautiques. (Franco-Bilbao Air Transport Co.)

Proposed Services: A general plan for air transport services to meet national requirements and provide communication with France, England, Africa and America.

Aerodromes in Operation: Alicante - Amposta - Barcelona - Bilbao - Madrid - Malaga - San Sebastian - Victoria - Larache - Melilla - Seville.

SWEDEN.

I.

RAILWAYS.

During the war neither the railways nor the buildings belonging to them suffered any direct damage. The lines are in good condition and repairs have been executed in accordance with the requirements of normal upkeep and traffic.

In regard to the building of new lines, the following new State lines are under construction :

- The inland line (Ostersund-Gallevare) ;
- The cross-country line Forsmo-Hoting ;
- The cross-country line Hallnas-Stensele ;
- The junction line Sveg-Brunflo.

The last of these lines will be the artery for direct traffic from Western Sweden to the northern portions of the country ; the other lines will be merely local services.

In regard to the condition of rolling stock, upon which great demands were made during the heavy traffic of the war years, it is at present repaired and is in good condition. In particular, more than normally careful attention has been given to the selection of the locomotives for the State Railways, and the new types of locomotives with the new type of boiler have proved very economical as regards fuel consumption. All the rolling stock on the State Railways are now furnished with brakes of the Kunze-Knorr system.

Analysis of Traffic and Amount of Traffic in 1919.

	State Railways	Private Railways Gauge Standard Narrow
Average length of lines operated during the year (km.)	5,500	5,995 3,392
<i>Train Traffic :</i>		
Train-kilometres total	24,866	19,009 8,409
Steam traction	24,431	18,315 7,569
Electric traction	435	549 752
Other means of traction	—	145 88
Passenger trains	12,844	9,603 3,119
Goods trains	10,632	9,317 5,200
Mineral trains	1,093	— —
<i>Steam ferries :</i>		
Kilometres		
Passengers (journeys)	99	— —
1st and 2nd class	1,031	1,141 365
3rd class	32,704	35,793 13,683
Military trains	359	419 113
Total.	34,094	37,353 14,161
<i>Goods (tons) :</i>		
Goods and mineral vehicles	13,886	18,871 5,318

*Details with regard to the State Railways, 1919.**Average Length of Trains :*

Fast traffic trains	31.8 axles
Passenger trains	18.7 »
Local goods trains	47.1 »
Main-line goods trains	68.4 »
Mineral trains	79.5 »
Average number of goods wagons loaded per day	4,290
No. of axle-kilometres of goods wagons :	
Loaded	445,612
Empty	100,849
Average load-capacity of trucks and covered wagons	13.7 tons
Average load of trucks and covered wagons	6.9 tons
Average time taken per journey ; covered wagons	4.9 days
Average time taken per journey ; trucks	7.8 days
Distance covered by goods wagons per wagon-year	11,802 km.

	In 1913	In 1919
Average length of journey ; kilometres	41	41
Average length of journey per ton of goods (excluding minerals) ; kilometres	106	135
Minerals	165	189

*Increase of Transport Tariffs on the State Railways,
1913 to 1920.*

A.—Passengers.

Distance kilom.	1st class %	2nd class %	3rd class %
20	273	211	220
50	300	233	208
100	331	259	208
200	308	240	192
500	246	188	150
1,000	222	169	131
2,000	205	154	119

B.—Goods.

Distance km.	Goods per package %	Valuable goods %	Miscellaneous goods per wagon-load %
20	513	390	255
50	396	320	230
100	354	289	236
200	332	274	223
500	319	264	213
1,000	313	260	208
2,000	308	256	204

On the private railways, increases have also been introduced proportionately greater than the increases on the State railways.

*Fuel.**A.—State Railways.**I.—Locomotives.*

Consumption of fuel :		1914	1919
Foreign coal	tons	507,200	346,900
Swedish coal	»	57,700	46,800
Briquettes	»	—	60,300
Coke	»	—	28,400
Peat	»	—	17,700
Wood	cubic metres	—	797,200

II.—Steam Ferries.

		1914	1919
Foreign coal	tons	19,600	15,300

Average annual cost of fuel :

Foreign coal	Crowns per ton	16.41	130.48
Swedish coal	» »	12.59	85.85

B.—Private Railways.

		1914		1919	
		Gauge		Gauge	
		Standard	Narrow	Standard	Narrow
Foreign coal	tons	306,997	83,482	220,605	39,758
Swedish coal	»	7,823	—	21,249	2,298
Briquettes	»	1,715	—	5,628	1,140
Coke	»	1,099	712	3,764	1,493
Peat and peat briquettes .	»	319	32	30,878	20,395
Wood (not used for locomotive fuel), cubic metres		4,510	3,323	442,511	269,009
Average annual cost of foreign coal consumed ; crowns per ton		20	20	133	149

*Receipts, Expenditure and Profits for the years 1913-1920.**A. State Railways.*

Year.	Receipts Expenditure		Profit (+)
	Loss (—)		
	Millions of Crowns		
1913	88.7	66.9	+ 21.8
1914	93.3	69.9	+ 23.4
1915	118.1	90.6	+ 27.5
1916	150.2	127.8	+ 22.4
1917	163.2	164.4	— 1.2
1918	259.6	304.3	— 44.7
1919	314.2	309.0	+ 5.2
1920	343.0	313.4	+ 29.6

B. Private Railways: Standard gauge.

1913	64.8	44.9	+ 19.9
1914	64.4	46.5	+ 17.9
1915	80.2	59.8	+ 20.4
1916	100.2	79.4	+ 20.8
1917	116.8	95.7	+ 21.1
1918	182.6	161.6	+ 21.0
1919	189.2	170.0	+ 19.2
1920 (Jan.-Nov.).	197.4	170.5	+ 26.9

C. Private Railways: Narrow gauge.

1913	7.4	13.3	+ 4.1
1914	17.9	14.1	+ 3.8
1915	20.4	16.4	+ 4.0
1916	25.1	20.6	+ 4.5
1917	31.8	26.9	+ 4.9
1918	52.8	47.2	+ 5.6
1919	59.4	55.0	+ 4.4
1920 (Jan.-Nov.).	58.6	53.6	+ 5.0

II.

NAVIGATION.

With regard to the ports, Annex 1, attached, contains the relevant information, giving figures for shipping and barge traffic in 1913-1918 in the ports of the kingdom, the use of which is subject to dues fixed by the King.

With regard to the state of the shipping, it should be observed that during the war the upkeep was necessarily neglected to a certain extent. But it is among the older groups of ships that the greatest decrease has occurred, while at the same time a large amount of new tonnage, generally of the highest quality, has been constructed; these new ships consist mainly of steamships and large sized motor-boats, so that all in all the Swedish merchant fleet can be said to have been renewed in the period between the beginning of hostilities and the end of 1920.

The amount of sea traffic can be seen from Annexes 2 and 3, the first of which gives the gross revenue in crowns of the Swedish merchant fleet during the years 1913-18, and the second the figures for direct navigation between Sweden and other countries during the same period. The Information Section of the Central Board of Trade has also drawn up a table with regard to the regular services maintained between Sweden and other countries by the Swedish shipping companies.

With regard to rates, fuel and the general financial situation of the Swedish ocean shipping, the Central Board of Trade has asked for information through its Information Section from the Union of Swedish Ship-owners, and has received replies to questions which the Union in its turn had addressed to the shipping houses affiliated to the Union.

From these replies it appears that the rates vary considerably in the case of different shipping houses.

Thus the increase in passenger rates varies from 100/350 %; rates are subject appear to have increased from 50-300 %. One shipping house stated, nevertheless, that the freights between the ports of Nordland and the East Coast of England had been raised by 465 % during the years 1913-1920, and that the freight for English coal had increased during the same period by 680 %.

With regard to the situation before the war, reference should be made to the statement on Swedish ocean shipping, particularly for 1913, which appears on page 168 of the publication called "*Kommersiella Maddelanden* for ar 1915".

The total consumption of fuel by the merchant fleet in the years 1913-1916 and the first six months of 1917 is shown in Annex 4 (attached). There are no figures available for the subsequent period.

With regard to the origin of the fuel consumed, it is not possible to give precise information. The ships of the trans-oceanic lines procure

their coal naturally in the ports at which they touch during the journey. The coal taken on board in Sweden generally comes from England, and in 1920 from America. In 1913, of the coal imported by Sweden, 95.4 % came from England, while in 1920, 51.6 % was imported from England and 44 % from the United States of America.

The average price of the fuel used in 1914, according to information supplied by the shipping houses, was 12 crowns per ton for coal and 60 crowns per ton for oil.

In 1920 the corresponding figures were 80 and 250 crowns per ton.

For purposes of comparison it may be observed that for the best shipping coal (best Durham screened coal) the average price c.i.f. Gothenburg in 1914 was about 18 crowns per ton, and in 1920 about 161 crowns. The price of fuel used employed in home maritime navigation must be reckoned on the basis of these prices.

Finally, with regard to the general financial situation of maritime navigation, the above replies received by the Union of Ship-owners establish the fact that it is not satisfactory either for ships plying between Sweden and other countries or for home navigation. As a result of the considerable fall in freight, which has not been accompanied by a corresponding fall in the expenses of navigation, the situation to-day is that the receipts do not meet the expenses. Accordingly, a large number of shipping houses have had to lay up their ships. The law regulating the hours of work at sea also created certain obstacles and greatly increased the time required for the journeys.

The fall which has recently taken place in the price of coal and other articles has no doubt improved the situation as regards ocean shipping to a certain extent, but the statements of firms concerned appear to indicate that maritime navigation has still to contend with extremely difficult conditions.

ANNEX I.

Shipping between Sweden and Other Countries in 1913 and 1918.

Countries and continents from which vessels have arrived or for which they are destined.	Total number of vessels arriving and leaving.			
	1913. Number.	Thousands of tons net.	1918. Number	Thousands of tons net.
Denmark and Faroe Islands and Iceland	38,843	7,867	23,678	5,032
Norway	9,049	924	3,706	506
Finland	4,935	1,204	2,490	344
Russia	1,439	763	147	75
Germany	16,501	7,754	9,463	7,708
Netherlands.	1,115	1,452	833	639
Belgium	416	364	—	—
Great Britain and Ireland. . .	6,967	6,300	1,372	1,269
France	822	686	120	125
Spain	168	162	39	26
Portugal	35	39	13	5
Italy	57	51	16	9
Balkan States	41	85	—	—
Other European Countries. . .	1	—	6	1
Total for Europe.	80,409	27,651	41,883	15,739
Africa	252	452	32	51
Asia	97	302	8	24
United States of America . . .	86	221	88	204
Argentine.	79	204	27	79
Other Countries of America . .	66	168	40	112
Total for America	231	593	155	39
Australia	57	189	9	27

ANNEX II.

Gross Receipts of Swedish Merchant Marine for Years 1913-1918; Millions of Crowns.

Year.	Steam vessels and motor-boats.					Sailing-vessels.			
	Goods rates		Pas-senger rates	Postal trans-port rates	Time charters	Total	Goods rates		Other rates
	Shipping abroad.	Home shipping					Shipping abroad	Home shipping	
1913	115.8	15.6	7.1	0.4	12.5	151.4	8.7	1.8	0.0
1914	111.2	14.4	8.4	0.5	5.3	139.8	5.3	2.2	0.1
1915	231.8	17.6	5.6	0.8	15.4	271.2	8.9	2.3	0.1
1916	392.2	21.1	7.5	0.9	22.9	444.6	20.7	3.0	0.1
1917	271.8	37.6	7.5	0.7	21.9	339.5	13.7	5.8	0.4
1918	434.4	59.8	12.2	0.7	96.5	603.6	19.4	7.2	0.2

ANNEX IV.

*Total Consumption of Fuel by Merchant Marine for 1913-1916
and first half-year of 1917.*

Year	Solid Fuel						Liquid Fuel.		
	Coal. tons	Coke. tons	Bri- quettes tons	Peat tons	Wood cubic metres	Rough coal kgs.	Mineral oil. kgs.	Benzine. kgs.	Spirit. kgs.
1913.....	1,082,940	65	—	—	102,907	2,509,675	874,643	39,389	146,524
1914.....	1,012,209	69	—	—	115,183	6,054,129	1,166,609	35,082	191,510
1915.....	1,050,057	5,984	866	540	311,800	9,688,583	1,481,435	61,478	266,655
1916.....	1,080,847	3,286	2,321	7,399	586,643	9,661,225	2,026,402	45,853	496,706
1917.....	340,500	703	1,246	2,300	195,325	2,329,778	1,242,727	28,928	291,319

III.

MOTOR TRANSPORT.

It should be noted in the first place that the automobile was originally mainly used in Sweden — as, no doubt, in other countries also — for sporting purposes and as an article of luxury.

Its use has spread as the motor industry developed, and the improvements effected in the construction of cars have caused the general use to-day of this means of locomotion, which has become one of the most important factors in the transport of both passengers and goods.

The development of the automobile traffic in Sweden during the years immediately before and after the great war cannot be more clearly demonstrated than by the statistics given in the following table, which shows the number of automobiles and motor-bicycles in the country each year between the years 1907 to 1919.

Year	Automobiles	Motor-bicycles
1907	662	362
1909	1,165	785
1911	2,102	1,370
1913	3,889	2,647
1915	5,476	4,673
1917	4,737	3,610
1919	8,506	9,059

The figures in this table were collected by the Commission on Ways of Communication, set up on September 29th, 1911, under Royal Decree in the Ministry of Finance. The figures for the year 1919 occur in the annex to the Draft Decree concerning the tax on automobiles which was submitted by this Commission on August 15th, 1920.

The figures for the years 1907 to 1915 show the number of registered motor vehicles, while the figures for the years 1917 and 1919 show the number of motor vehicles actually in use (that is to say the number of registered vehicles not including those which are not running), this explains the fact that the figures for 1917 are lower than the corresponding figures for 1915.

SWITZERLAND.

I.

RAILWAYS.

General Statement.—The Swiss railways were not disorganised by the world war to such a disastrous extent as those in the neighbouring countries engaged in the conflict. Switzerland was, nevertheless, gravely affected by the war by reason of her situation in the middle of Europe and her lack of direct river communications with seaports. The proposed completion of the Swiss railway system and the upkeep of the lines was considerably delayed, traffic was greatly diminished, and it was impossible for some time to obtain sufficient fuel; operation expenses increased to an extraordinary extent, and the financial situation of all the railway enterprises, with few exceptions, became very precarious. It will be a long time before the damage suffered in the field of transportation can be repaired and the financial situation restored to its pre-war satisfactory condition.

The statement which follows deals with the Swiss railways with normal and narrow gauges, and rack railways. The thirty-seven tramways, with a total length of 493 km., and the forty-nine funicular railways, with a length of 49 km., are not included in this statement.

Lines and Plant.—The length of the Swiss lines in operation increased during the years 1913-1920 from 5,077 to 5,345 km., an increase of 268 km. The construction of new lines had already commenced before the war. Of the total length, 1,620 km., i. e., about 30 %, are worked by electricity. Among the new lines, the following must be mentioned as being specially important: the mountain railway Frutigen-Brieg, 60 km.; the Jura Pass between Moutier and Longeau, 13 km., (Berne-Loetschberg-Simplon Co.); the Sissach-Olten Tunnel 17 km. (Federal Railways); the section Brieg-Gletsch, 47 km. (Furka Co.).

The construction of the Furka Railway, which was almost completed in 1914, had to be suddenly suspended; the eastern section Gletsch-Disentis of 51 km., finishing in the valley of the Rhine, is not yet completed.

Among the lines in course of construction, mention should be made of the second Simplon Tunnel from Brieg to Isello, 20 km. long, estimated

at 35 million francs in round figures, and the branch line Locarno-Camedo-Domodossola of 14 km. on Swiss territory. The second Simplon tunnel is expected to be completed in 1921.

The length of double tracks on the Federal Railways has increased in the last years from 785 to 888 km. In normal times this increase would have been very much greater.

Bridges, viaducts, etc., are very numerous on the Swiss railway systems. The tunnels have a total length of 282 km., of which 88 km. are adapted for a double track of standard gauge, 112 km. for a single track of standard gauge, and 82 km. for narrow-gauge tracks. The expenditure on the construction of these tunnels amounted to 512 million francs. The total length of bridges is 74 km.

A stimulus was given to electric traction by the shortage and high cost of coal. A programme has been drawn up for the electrification, in stages, of the whole Federal Railway system, i. e., 2,881 kms. The work of electrification has been completed, and trains are now running on a section of the St. Gothard line (91 km.) on the Berne-Thun line (32 km.), and on the Brieg-Sion line (55 km.). The installation of hydraulic and electric power throws a heavy burden on the Federal Railways. The expenses of two installations on the Gothard line are estimated at 50 million francs. The Barberine works in Valais are estimated to cost 37 million francs. At the end of 1920 the expenditure on installations, running and rolling stock amounted to 146 million francs. The budget of 1921 estimates 52 millions for the same purpose. Electrification will be continued as far as circumstances permit.

The private railways, which are of great importance for the districts which they serve, altered their system of traction, with State assistance, on the basis of the Federal Law of October 2nd, 1919. Several of these enterprises have already asked for financial assistance. Five railways created with the assistance of the Canton of Berne, of a length of 103 km., are now entirely electrified. The electrification of the system of the Rhaetian Railway Company has been carried out over a length of 180 km. and is now approaching completion.

The upkeep of the railway installations had to be reduced, during the critical period, owing to the shortage of labour, material and resources, but this reduction did not in any way endanger the working of the lines. The railway companies which have the necessary means at their disposal are making efforts to put their system into perfect working order. The extraordinary rise in the price of materials was particularly noticeable in the price of steel rails. The 1913 price of 170 francs (franco Bâle) rose subsequently to 500 and even to 600 francs.

As regards rolling stock, the decrease in traffic resulted in a number of locomotive and passenger coaches being idle. It was found possible to lend a certain number of locomotives to foreign railways. On the other hand, the number of goods wagons was no longer sufficient; the reason for this was that foreign railway systems did not possess sufficient rolling stock for the goods which they sent to Switzerland, and considerable quantities of goods imported from the Mediterranean ports had for a long

time to be exclusively transported by Swiss wagons. It became imperative to increase the number of goods wagons. Between 1913 and 1920 the number of wagons increased from 19,300 to 25,000.

At the end of 1919 there were :

Steam locomotives	1,400
Electric locomotives	141
Passenger motor trains	350
Passenger carriages	4,731
Goods and baggage vans	24,223

The purchase of this material involved an outlay of 354,200,000 fr. Prices have continually increased since 1914. In the pre-war period the price of a locomotive was reckoned on the basis of 1.60 fr. per kg. ; the price rose subsequently to 8 fr. per kg.

The number of railway officials, which in 1913 amounted to 45,386, fell to 41,799 in 1918. In 1919 this number rose to 44,467, in consequence of the increase in traffic and the introduction of the eight-hour day.

In 1919, the staff received in salaries, bonuses and allowances for the high cost of living, about 70 per cent. of the total expenditure (347 million francs), i. e., a sum of 243,600,000 fr. The allowances for the high cost of living alone amounted to about 104,000,000 francs.

Traffic.—In May 1914, the date of the opening of the National Exhibition, the time tables contained a very large number of passenger trains. The passenger traffic, which was developing in a most satisfactory way, was suddenly checked by the declaration of war. During the mobilisation of troops for the protection of the frontier, trains ran according to a military time-table, and civilian traffic was considerably reduced. At the end of 1916, when conditions had altered so as to permit an improvement of the train services, the scarcity of coal began to make itself felt a fresh obstacle to the improvement of the services, and reached its climax towards the end of 1918. The number of passenger trains had to be again reduced. In order to economise coal, it became necessary to use wood and peat. After December 2nd, 1918, the number of trains had to be reduced to a minimum, and for a certain time all traffic was stopped on Sundays. It was not until Easter 1919 that the time-table could be at all improved. The number of trains per year and per kilometre fell from 10,349 to 5,111, and the axle distance travelled by passenger coaches from 103,300 to 44,600 per kilometre. In 1919 it became possible to import coal in greater quantities, but its very high cost prevented any considerable increase in the number of trains.

Passenger traffic between the various countries almost completely ceased upon the declaration of war, and the international trains, formerly so numerous, were abolished. On the Simplon-Brieg-Isello line passenger traffic fell to 2 % of the normal volume.

After the conclusion of peace, opportunities for passenger traffic gradually improved, but obstacles to its normal development still existed ;

in particular, difficulties were experienced with regard to the obtaining of passports, customs formalities, certain hindrances on the railways of neighbouring States, the extreme difference between the exchange rates of various countries, the serious increase in transport rates, and the fact that the former political and economic relations between the various countries were not yet sufficiently re-established, etc. International traffic can only recover as these difficulties disappear.

In spite of these difficulties, internal passenger traffic has not been greatly reduced. The total number of passengers fell from 128,800,000 in 1913 to 106,600,000 in 1918, and rose in 1919 to 114,352,000.

Goods traffic, both from and to foreign countries, was formerly despatched through the various frontier stations, according to the desire of the consignor.

During the period when traffic was greatly restricted, the supply of the country with food and raw materials had to be carried out almost exclusively by the route Cette-Geneva. These difficulties forced the Swiss Government to create a Central Office for Foreign Transport, and also to join the Union for Sea-going Transport, which was specially instituted to facilitate overseas traffic.

The hindrances to a resumption of the international passenger traffic also exist to some extent in the case of goods traffic. Swiss exportation suffers particularly from the abnormal exchange rates and the consequent losses to commerce and industry. It is to be hoped that the coming fall in the price of coal will remedy this state of affairs, and thus facilitate the resumption of commercial relations between the various countries.

Rates.—The continual increase in working expenses forced the railway administrations to make repeated increases in the rates both for passengers and goods. These increases were intended as far as possible to cover the increase in expenditure.

In the case of passenger traffic, these measures began in 1915 with a slight increase in return fares. This was followed by increased rates for all kinds of tickets, the abolition of return tickets at reduced prices, all excursion and circular tickets, and of reduced prices generally, and by the collection of an extra charge for through trains. The last augmentation, which came into force on August 1st, 1920, comprised an increase upon pre-war rates of 55 % for second-class tickets and 45 % for third-class tickets. By these measures, the average revenue per traveller and per kilometre, which was 4.1 centimes in 1913, was raised to 4.9 centimes in 1918, and to 6 centimes in 1919. In reality the increase is still greater, as the average for 1913 was higher owing to the relatively greater use of first and second-class tickets.

During the years from 1914 to 1919, the Swiss railways carried, at very reduced rates, large numbers of sick and wounded soldiers, of convalescent interned men, and of children from the large foreign towns who came to spend their holidays in Switzerland.

From 1916 onwards the goods rates were increased every year. On August 1st, 1920, they were approximately 140 % higher than in 1913.

Another increase resulted from the abolition of most of the special rates. The goods tariff recently introduced is calculated upon a new basis. A differentiated tariff has been chosen in order to cheapen long-distance traffic.

The average revenue per train kilometre in 1913 was 9.3 centimes ; in 1917, 10.2 ; in 1918, 15.2 ; and in 1919, 19.1.

Experience with the new rates shows that a further increase may not be to the interest of traffic, the reduction of which is beginning to be felt. Moreover, high tariffs favour motor competition for short-distance traffic.

Fuel.—The influence of the war on the coal supply of Switzerland is shown by the following table, which refers only to the Federal Railways (2,881 km.).

	1913	1918	1919	1920
Consumption in tons	701,052	387,024	431,274	510,000
Total cost in 1,000's of frs.	18,957	51,365	67,865	96,900
Cost per ton	27.04	132.72	157.36	190.00

Country of Origin :

(a) Germany tons	680,722	384,929	39,000	10,000
(b) England »			21,500	135,000
(c) Belgium »		1,035	125,600	15,000
(d) France »	20,330	1,060	140	190
(e) America »			153,000	285,000
(f) Saar Valley »			78,000	15,000
(g) Switzerland »			14,034	49,810

Until 1918 our coal came almost exclusively from Germany, but towards the end of that year, that country ceased almost completely to supply us, and was replaced by Belgium, America, and, later, by England. In 1920, America, though so far away, supplied us with the greater part of the fuel which we used. The increase of price in the latter year was again most serious; in the case of certain consignments, prices even exceeded an average of 190 fr. per ton. Now, however, the increase and the regularisation of the production of coal, together with the reduction in the cost of transport, permit us to hope for a very considerable reduction in the price of this commodity, a reduction which has, moreover, already begun to be noticeable.

Financial Results.—The influences which so unfavourably affected the working of our railways have produced, with every year that has passed, a still greater effect upon the balances of the various accounts and a disastrous effect on the financial situation of the companies.

Large deficits and considerable debts have resulted from the continued disturbance of the national economy.

The following figures refer to the whole of the Swiss railways (including tramways and funicular railways) for the years 1913, 1918 and 1919.

	1913	1918	1919
	in 1,000's of francs		
Working revenue	279,148	318,237	446,704
Working expenditure	189,380	288,457	383,575
Surplus revenue	89,768	29,780	63,129
Annual balance on profit and loss account	2,677	66,507	39,305
Accumulated balances	3,416	175,915	215,220

The credit balance of the working expenses account for the year 1919 did not nearly equal that for 1913, in spite of the considerable increase in receipts. The excessive increase in working expenses prevents the railway companies from recovering their financial equilibrium.

The credit balance of the profit and loss account for 1913, a modest total, represents what remained of the receipts after all financial obligations—the paying off of mortgages, the strengthening of reserve funds and the allocation of dividends—had been duly met. During the war the majority of undertakings were not able to accumulate and reserve or to pay dividends. A great many were obliged to ask the State and the communes for indispensable loans to enable them to maintain the lines in operation. Others were obliged to regulate their financial situation by agreements with their creditors or by the conclusion of special legal arrangements.

The capital invested in the Swiss railway systems amounted at the end of 1919 to fr. 2,669,291,000, of which fr. 1,179,174,800 applied to the Federal Railways. These sums do not include subsidies and mortgages, totalling about fr. 185,000,000. These figures show the considerable importance of railways in the country's budget.

To sum up, the injury caused to Swiss railways by the war may be estimated for the period 1914-1919 as follows:

Increase in worthless bills to be redeemed	Fr. 20,800,000
Increase on the debit side of profit and loss accounts	» 210,100,000
Decrease in assets of certain railways	» 8,500,000
Decrease in reserve funds	» 5,500,000
Deficiency in dividends	» 3,000,000
Decrease in yield from reserve funds	» 800,000
Debts and interest cancelled	» 2,500,000
Decrease in the nominal value of shares	» 3,400,000
Total loss	Fr. 254,600,000

To this sum must be added the additional burden laid upon the State finances in the form of increased rates. These charges, estimated according

to the receipts for 1913, amounted to about fr. 150,000,000 for 1919. The depreciation of shares and bonds issued by the railway undertakings should also be taken into consideration.

Conclusions.—The Swiss railway companies will certainly endeavour, to the best of their ability, to assist in the restoration of the economic situation of the world, which has been so long disturbed, as well as in the development of internal and international communications, so that they discharge the obligations imposed on them by their position in the centre of Europe. They will also endeavour to improve their own unsettled financial situation.

In order to give a general idea of the facts which we have just set forth, we have grouped all the figures concerned in a statistical table.

*Comparative Data regarding the Technical and Economic Situation of the Swiss Railways;
excluding Tramways and Funicular Railways.*

	1913		1918		1919		1920 (approx.)		1921 (Budget)
	Steam.	Elect.	Steam.	Elect.	Steam.	Elect.	Steam.	Elect.	
<i>State of the Lines, Total kms</i>									
Federal Railways, ¹⁾	3,975	1,102	4,035	1,310	3,853	1,492	3,725	1,620	
Standard-gauge private lines . .	2,770	22	2,859	22	2,774	107	2,774	107	
Narrow-gauge	660	226	621	245	600	266	487	379	
Rack Railways	495	794	512	976	436	1,052	421	1,067	
	50	60	43	67	43	67	43	67	
<i>Double tracks of Fed. Railways</i>	785		881		888			888	
<i>Tunnels on all Railways</i>	232		257		257		257		
— Standard gauge	174		191		191		191		
— Narrow gauge	58		66		66		66		
Cost of tunnels in 1,000 frs.	428,000		512,000		512,000		512,000		
<i>Bridges on all railways</i>	67		74		74		74		
<i>Amount of Rolling Stock.</i>									
Locomotives } Steam	1,538		1,410		1,400				
} Elect.	96		124		141				
Passenger Motors	322		351		350				
— Carriages	4,748		4,760		4,731				
Goods Wagons and Vans . . .	19,267		23,525		24,223				

<i>Operating Staff.</i> ²⁾	Total	45,386	41,799	44,467
Fed. Railways		37,542	34,547	36,704
Standard gauge, private ..		3,359	2,833	3,244
Narrow gauge ..		3,958	4,168	4,271
Rack Railways		527	251	248
<i>Traffic.</i>				
Total train kms.				
Federal Railways				
Stand. gauge private. "				
Narrow gauge " "				
Rack Railways				
<i>Passenger Axle Kms.</i>				
<i>Goods Wagon Axle Kms.</i>				
<i>Passengers Carried.</i>				
Federal Railways				
Standard gauge, private				
Narrow gauge "				
Rack Railways				
<i>Tons of Goods Carried.</i>				
Federal Railways				
Standard gauge, private				
Narrow gauge "				
Rack Railways				

¹⁾ Including the narrow-gauge railways Bruenig-Lucerne-Interlaken, 74 kms.

²⁾ Employees and workmen.

II.

INLAND NAVIGATION.

The Rhine is the principal navigable waterway, which gives Switzerland access to the sea. A few words on the subject of traffic on the Rhine may therefore be of interest.

During the war, Rhine navigation was completely isolated and was cut off from maritime traffic. This state of affairs was only modified at the beginning of 1919, after the left bank of the Rhine had been occupied by the Allied Armies. After this date it became once again possible to utilise the river for bringing supplies to Switzerland, and the Allies themselves made use of this waterway. After the signature of the Treaty of Versailles, when the blockade was raised, Germany in her turn commenced to import great quantities of cereals by means of the Rhine.

During the whole of 1919 and the first half of 1920, the railway communications between the ports of Antwerp-Rotterdam and Switzerland were passing through a severe crisis. An enormous quantity of goods which ought to have been sent by rail were sent by the Rhine.

This influx of goods had the effect of increasing to an extraordinary degree the cost of rates for navigation on the Rhine. In the case of traffic between Rotterdam-Bâle, Antwerp-Bâle, Ruhrort-Bâle, Mannheim-Bâle, Strasburg-Bâle and Kehl-Bâle, these rates considerably exceeded railway rates. The plant used for the navigation of the Rhine suffered far less from the war than did the railway plant, although far less attention was given to its upkeep than in normal times. This disadvantage had, however, very little influence on the returns received from the Rhine mercantile flotilla. The same applies to the ports and their equipment:

On the whole, the Rhine navigation was able to cope with the considerable revival of traffic. Difficulties only arose at the ports of arrival when the railways were unable to forward the goods to their destinations. It is true that the period of low water, which was exceptionally long between September and December 1919, and which was immediately succeeded by a heavy flood, brought about a crisis of unprecedented severity in the Rhine traffic. But as soon as the river had returned to its normal level, it became possible to surmount all difficulties and to satisfy all requirements. As the river route no longer had to compete with the railways (in consequence of the insufficiency of the latter), the navigation companies were able to establish their tariff for freights at a low rate which gave them large profits. It was the German shipowners who benefited chiefly from this state of affairs. The Swiss and French navigation companies which were constituted after the conclusion of peace, and did not yet possess large fleets of barges, etc., were unable to make equally large profits. Nevertheless they prospered during the first years of their existence.

If, however, the general crisis continues, it cannot be doubted that their situation, which is at present satisfactory, will change considerably for the worse.

From the second half of the year 1920 onwards the renewal of activity on the railways became more and more noticeable. By reason of the favourable situation of the Swiss exchange rates, the cost of transport by rail from North Sea ports to Switzerland fell to an extraordinarily low figure; as a result the Swiss traffic was once more diverted from the river to the railways and a considerable fall took place in the Rhine freights.

The economic crisis in Europe during the months of November and December 1920 and January 1921 had an important influence on the Rhine navigation services. It is no exaggeration to say that at the present time they are passing through an acute crisis. The extreme state of stagnation which characterises it at present is chiefly due to the scarcity of goods to be transported. For, in spite of the very low level of the river during the last few months, the Rhine fleet could cope with a far more intense traffic than that with which it has to deal to-day.

All the ports on the Rhine, from its mouth to Bâle, are capable of satisfying requirements, upon condition, however, that the railways can bring the goods to the ports, or, on the other hand, can re-forward the goods unloaded on the quays. The technical equipment of the Rhine ports have not suffered from the war. The increased cost of living and the demands of the worker have, however, considerably increased the cost of labour in the ports. In addition, the regularity and reliability of the labour—which are decisive factors in the domain of transport—have considerably deteriorated since the conclusion of peace.

Immediately after the Armistice had been signed, Switzerland undertook the construction of the port of Bâle-Petit-Huningue. The cost was estimated at about 10 million francs. This port will be ready for use in the summer of 1921. After this date Bâle will be able to provide for the requirements of a traffic of more than one million tons during the navigable period, which consists of 8 months in the year.

The channel of the Rhine, like the port installations, has been little affected by the war. From the sea to Strasburg, the capacity of the Rhine as a navigable waterway is as great as before the war. In the part between Strasburg and Bâle, which had not yet been regularised and which has necessarily to be traversed by vessels entering Switzerland, the state of the channel has become less satisfactory by reason of the total interruption of navigation for several years. The development of navigation in the future will probably result in improving the navigability of the channel to some extent, but in the interests of navigation it is desirable that a regular dredging service should be organised between Strasburg and Bâle. This service, which could be established at a relatively low cost, would make it possible for barges to carry heavier loads, and would also allow a longer period for navigation.

REPORTS

OF THE BOARD OF NEW YORK CITY
AND TRANSIT AFTER THE WAR

APPENDIX

REPORTS

ON THE

CONDITION OF COMMUNICATIONS AND TRANSIT AFTER THE WAR

SUBMITTED TO THE BARCELONA CONFERENCE

BY

DR. MAGGIORINO FERRARIS

Member of the Italian Senate
Vice-President of the Conference

AND

M. SALVADOR DE MADARIAGA

Mining Engineer

Technical Expert of the Spanish Delegation to the Conference
on the Conditions of Routes of Communication and Transit after the War.

REPORTS

CONDITION OF COMMUNICATIONS AND TRANSIT AFTER THE WAR

PRESENTED TO THE HOUSE OF REPRESENTATIVES

By the Honorable J. P. MORRIS,
Chairman of the Committee on
Communications and Transportation.

1919

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REPORT

BY

M. Salvador de MADARIAGA.

From the very outset of their work, your Rapporteurs feel deeply impressed as to the difficulty of the task with which you have honoured them. The materials from which they have to construct their report are, by their very nature, of a most disconcerting diversity, all the more so because they have been selected and arranged in different countries, approached from different aspects, conceived in the most varied states of mind and, in certain cases, directed to most divergent ends.

There is in this diversity an intrinsic element which is, no doubt, inevitable. It is impossible to reduce the whole question of transport to a system of technical reports. One might as well attempt to reduce the earth to a network of parallels and meridians. The *genius loci* applies just as much to railways and waterways as to those manifestations of the immaterial life of peoples in which we are most accustomed to observe its influence, and the task of your Conference and of those which will follow it would be much easier, but also much less captivating, if there were none of these natural forces acting in opposition to the tendency of the age towards universal co-ordination of national activities.

It will always remain impossible to regulate this elusive vital element. We feel, however, that it is possible here and now to attempt to limit its sphere of action with regard to one definite point: the formation of a periodical compendium of information as to the condition of transport in all countries affiliated to the League of Nations. The reports which we have had before us are all, without exception, of the greatest interest. Taking them as a whole, however, they show a lack of homogeneity which is worthy of remark. To use a technical simile, they are constructed on very different scales. This lack of homogeneity is not, in our opinion, solely due to the influences of the *genius loci*. In our opinion it may be largely attributed to the fact that the writers were not accustomed to working together; the League of Nations will, in fact, have to create its own technical traditions.

But, in our opinion, there is yet another element which contributes to the confused impression resulting from a perusal of the whole set of reports; we refer to the influence of the war. This influence is visible everywhere. For instance, it is claimed by Chile in explanation of the interruption of the development of her motor-transport—a very striking example, if indeed we are entitled to consider the great Republic of the South, which actually heard the fire of guns from her coasts, as being far removed from the theatre of war. But as we draw nearer to Europe, and more especially to Central Europe, the war becomes more and more predominant in our minds as the circumstance which determines the general character of the situation before us.

Here is a typical example: Transport in and between the Succession States of the Austro-Hungarian Monarchy is being carried out under the most difficult conditions, because all the arrangements in regard to rolling-stock are rendered uncertain by the fact that the various Succession States have only a precarious title to the rolling-stock in their possession, pending the final allocation which is to be made under the Treaty of St. Germain.

We have, therefore, come to the conclusion that what we are asked to consider is not a system of universal transportation operating normally, but a system which has been shattered and overturned by a cataclysm of an almost geological character.

The most important effects of the war on the system of international transportation may be classed under two headings: economic and political.

From an economic point of view, the first fact which strikes us is the increase in the price of coal. Take, for example, a country which is neither very favourably or unfavourably situated in this respect: in 1919-1920 the Danish railways had to pay 121.4 krs. per ton, while in 1913-1914 they paid 20.8 krs. for the same amount.

Next comes the increase in wages, which was combined, in several countries, with a decrease in the working day. Thirdly, the unequal rates of depreciation of the currency, the results of which are in some cases considerable. Thus one country states that it had to pay 1,850 millions merely as the exchange premium on a quantity of coal less than that which—before the war—cost her 55 millions in the same currency. To these results of a domestic character must be added the disorder introduced into international tariffs by the mobility of the exchanges and the fact that these tariffs have become almost prohibitive for certain countries whose currency is much depreciated. Finally, in the economic category, there are difficulties of a technical nature which are also a legacy of the war—as, for example, the bad state of repair and the inadequacy in quantity and quality of the rolling-stock. All these circumstances have involved the railway companies or services in a situation of embarrassment, which they have sought to alleviate by increasing their tariffs, in many cases to a considerable extent.

But despite the gravity of the economic results of the war, we consider that the political lessons which may be drawn from it are of even greater significance. For the war, which refashioned Europe on a new political model, effected, at the same time, a complete transformation in its transport

system. Thus, changes in the general direction of currents of traffic are taking place in those countries which were formerly under the Austrian Crown. The reports of the Czecho-Slovak and Austrian Republics provide us with most interesting information in this connection. At the same time, the new national system set up by the Peace Treaties feel the lack of certain organs which are indispensable for their operation as national railway units. With some of them the general axis of the system fails to correspond to the new requirements of traffic. Others—nearly all—have no frontier stations and must hastily draw up plans for customs houses, must transfer goods stations, and make arrangements for the exchange of rolling-stock.

Thus, we have before us an admirable object lesson. The means of communication—railways, navigable waterways, even roads—appear to us not as mere mechanical installations to facilitate the transport of objects, but as living organisms wrought by the political communities which inhabit and—so to speak—fashion the various countries. Their form and development are not solely the outcome of topographical and technical circumstances and of local economic conditions. They depend rather on the very mind of man. That is to say, that means of transportation—especially those which depend most directly on the conformation of the country, such as railways, canals and even small coasting traffic—are closely fashioned by national realities. They may be said to represent the type of international problem in which the importance of local factors is most deeply felt, and in which the negotiator runs the least risk of wandering into abstractions. In short, transport systems form part of the body of nations. They are their arterial system. This gives rise to two tendencies to which attention must be particularly drawn.

The first is a tendency towards regional groupments by zones, either local or sub-continental; this is a direct result of the physical characteristics of the means of transport.

The second is a tendency to make the means of transport as independent as possible of foreign countries, particularly as regards fuel. This tendency encourages the development of national systems of waterways and, particularly, the electrification of railways in countries which do not produce much coal.

It is hardly necessary to say that both these manifestations of the *genius loci* are highly beneficial to the political and economic development of the world. They are, in our opinion, a very happy augury for the League of Nations, for international society must not be conceived as an artificial super-structure, of which the nations are the foundations, but as a universal organism resulting from the harmonious combination of organisms whose sphere of action is more limited.

These localist tendencies, however, contain an element of limitation which, though necessary and healthy, needs to be corrected by the tendency towards universality, the strength of which in our modern world is represented by this Conference. It is, therefore, indispensable to the good government of the world that this universal tendency should also possess a means of expression and of action. Just as the national and the

continental spirit acting through the medium of the States endeavours, to fashion local transportation in their image, so it is necessary that the universal spirit, acting through an organism also universal, be enabled to fashion in its image the world transportation.

As to the exact principles which should guide the creation of such an organism, I trust that the Conference will allow me to leave the task of describing them to my eminent colleague Senator Ferraris.

April 19th, 1921.

REPORT

BY

Dr. Maggiorino FERRARIS.

Gentlemen,

The report which has just been submitted to you by our distinguished colleague M. de Madariaga shows the influence exercised by the war on the ways and means of communication and transit, and more especially on railways in the various countries of the world.

It appears, however, open to question whether the war brought about changes either of a material and technical nature, or of a moral, economic and legal order which are so important and so lasting as to be considered as new elements in the life of the nation.

It does not seem possible to maintain that the war effected any very remarkable change or progress in the organisation or operation of the means of communication and transit, except perhaps in respect of aerial navigation. The notable progress made in military aviation brought the machines and apparatus of aerial navigation to such a pitch of perfection that extremely important and permanent consequences are already apparent in the economic relations between the various nations. It marks a great step forward in the history of communications, and it will, we trust, confer benefits on the human race which will compensate it for the ravages, ruin and desolation inflicted by aviation during the war. But aerial navigation does not fall within the scope of our activities, and we can only take note of the hopes and expectations which are bound up with this new system of communication.

There is another field in which progress of a material and technical nature has been made, largely as a direct outcome of the war, especially from the point of view of practical application.

In the first place, the high price of coal and the difficulty experienced at times in obtaining supplies of coal have given a notable impetus to research work on the subject of electric traction by land and by inland waterways, and also in regard to the substitution of liquid fuels for coal

as a source of motive power for railways and maritime transport. For instance in various countries, vast schemes for electrifying railways are projected or being carried out, and we may expect that substantial progress in this sphere will shortly be realised.

A second fact, which is equally apparent, is the improvement effected by the war in inland waterways and in the equipment of seaports. The transport capacity of various countries has consequently undergone a considerable increase. The remarkable improvement effected during the war in the French ports as the result of a policy carried out with a very definite object and with assiduous efforts will suffice as an example. You will find extremely interesting information on this subject in the memorandum submitted by the French Delegation. Belgium and the Netherlands also continue to make extensive improvements in the equipment of their ports.

In addition we must note the efforts made by France and Italy during the war to increase and improve their inland navigation, and the work carried out by Great Britain on the Tigris and Euphrates. All these improvements may now be enjoyed in time of peace. Nor should we, in fairness, omit mention of the investigations and the work which Italy is at present carrying out with respect to the navigation of the Po. With this work, which will be one of the great achievements of our time, the name of M. Bignami, the distinguished Italian Delegate to this Conference, is honourably associated.

But, from the point of view of the development of means of communication, perhaps the most conspicuous feature of the war was the greatly extended use of motor traction for the transport of both passengers and goods. This marks the most recent advance in the sphere of transportation. Motor traction appears likely to assume exceptional importance for passenger traffic in undeveloped countries and in the colonies, and to supersede commercial railways and tramways, which are at present too costly. Even in England, motors are at present being run successfully along the main lines of communication, in addition to the railways. The reports submitted by the United Kingdom of Great Britain and Ireland is extremely interesting, especially as regards the transport of goods by motor-lorry. A kind of clearing-house has even been established to facilitate the collection and distribution of goods intended for motor-transport. The reports sent in by Sweden, Czecho-Slovakia, France and other countries also furnish us with important information on the subject and with opinions to which I would direct your attention.

To sum up, these four facts: Electric traction, the use of liquid fuel, the progress of inland navigation, and above all, of motor transport, appear to represent the most important results of the development of the means of communication and transport which have been bequeathed us by the war.

The immense increase in the merchant service of the United States of America would also be a subject worthy of mention if this form of transportation came within the sphere of our labours.

* * *

If we now pass on from technical matters to questions of an economic and administrative nature, the first fact which strikes us is the more extensive and closer co-ordination to be observed between the various communication and transport services. Railways, navigable waterways, and ports are now being worked with a far more effective system of central control. This is the inevitable result of the war. It is illustrated, for example, by the formation of a Ministry of Transport in England.

But in my opinion, the supreme legacy of the war is the establishment of the League of Nations. I consider that the League of Nations is destined to achieve notable results of an economic and administrative nature in the field of communication and transit.

At the first meeting of the Council of the League of Nations at Paris in January 1919, a meeting which marked the beginning of the practical work of the League and which I attended as Delegate for Italy, I declared my firm conviction that not only the future, but possibly the very existence of the League depended on the action it would be able to take in economic and social questions, and on the influence it would be able to exert in such matters. The great problems of labour, credit, and communications and transit, could not, in my opinion, be solved without the beneficial and progressive influence of the League. No one among us is unaware of the atmosphere of indifference and scepticism in which the League is carrying on its work. But I, like M. Neujean, am one of those who have faith in the League of Nations. An institution which, in the short space of nearly a year, has given us those three great economic conferences: the International Seamen's Conference at Genoa, the Financial Conference at Brussels, and the General Conference on Communications and Transit at Barcelona, indeed furnishes evidence of its active interest in the solution of those grave economic questions which are at the root of post-war international reconstruction.

The great historical event of the creation of the League of Nations raises a preliminary question which is none the less of a fundamental nature: What influence will the League exercise on the organisation and future operation of the means of communication and transit?

That was the question which occurred to me as I read the reports submitted by the various countries with keen satisfaction.

In what direction is the League of Nations to exercise a useful influence on the development and organisation of the means of communication and transit and, more especially, on that of railways?

In attempting to answer this question from a purely personal point of view, I have no intention of putting forward a programme, still less of confronting you with proposals or resolutions. I would merely ask your permission to give the main outlines of some ideas which might be investigated at some future date, and, possibly, carried into execution.

Sir Francis Dent has very truly said, in his statement on the railways ¹, that in the future, we must pass from the system of conventions between groups to a system of international conventions. I will venture to add that the same idea occurred to me when reading the reports sent in by the various countries and when also listening to the important statements which were made at our meetings, notably by M. Etienne, Deputy-Director of the Central Office of International Railway Transport, and by various representatives, among others by the Brazilian Delegation (M. Barboza Carneiro) and by the Czecho-Slovak Delegation (M. Lankas).

It is essential that we should build, in our scheme, on organisations that are already in existence and working well in practice—e.g., the Central Office at Berne, and similar institutions such as the clearing-house in England, and the Association of German Railways (*Verein Deutscher Eisenbahnverwaltungen*). The fundamental principle of these institutions is that, though the sovereignty of each State and the autonomy of each railway administration must be scrupulously respected, those services and activities which are of an essentially international character must nevertheless be operated jointly whenever their co-ordination is likely to prove of material advantage to the progress of communications, to facility and rapidity of exchange, and to economy in working.

You are all familiar with the results which have been obtained by that great and magnificent institution the Central Office at Berne, both as regards international traffic and in achieving technical unity, which in itself represents an advance of exceptional importance. Up to the present, however, this organisation has only attempted to deal with the transport of goods; the next step to be taken would therefore be the signing by the various States of Europe of a draft international convention, similar to the convention on the transport of passengers and luggage. The latter instrument was drawn up by a conference which met at Berne in May 1911, and still requires to be converted into a regular convention.

The improvement in the international transport of passengers is indisputable, especially in respect of *trains de luxe*, and fast express trains. But the main feature of the present period is the continually increasing importance of third-class passenger traffic in home transport. This remarkable development started in England and is constantly extending to other countries. If the adoption of an international convention on the transport of passengers should succeed in bringing about a similar progress in international traffic, especially in the case of second and third class passengers, a practical and beneficial result would have been achieved, which would be in accordance with the liberal and democratic spirit that characterises our age.

But an event of such importance as the establishment of the League of Nations should give a fresh impetus to the tendency towards co-ordination and technical co-operation which was initiated with such signal success by the Berne Office. I repeat that I have no intention of submitting

¹ See Verbatim Records and Texts relating to the Recommendations for the International Regime of Railways (Barcelona Conference, League of Nations).

proposals, nor of formulating a programme ; I will merely outline some of the methods by which the gradual work of progress and international co-ordination, as regards means of communication, might be developed.

Judging by the example and experience of the already-existing international bureaux and institutions, the main branches of collective international activity in the sphere of communications and transit may be grouped as follows :

- (a) Enquiries, data and information ;
- (b) Time-tables, conditions of transport and tariffs ;
- (c) Management, bookkeeping, and settlement of accounts ;
- (d) Commercial service.

The mere enumeration of these headings gives us some idea of what may be achieved in actual practice, both from the scientific and the practical point of view. No one can question the desirability of having a common centre for observation and investigation, for collecting laws, official documents, publications of various bodies, statistics, schemes which are under consideration, and all documents referring to the development, progress and operation of the means of communication and transport in the various countries of the world.

Much could undoubtedly be done by common collaboration to facilitate the drawing-up of time-tables and the gradual adoption of homogeneous, if not uniform, tariffs, especially for goods traffic.

I have already called attention to the very long and valuable experience of the railway clearing house in England and the adoption of a similar system by the Association of German Railways. The existence of these institutions, which deal with questions of bookkeeping and the liquidation of the accounts of the international traffic of various administrations, suggests that a number of countries, particularly in Western Europe, should begin to take steps in the same direction.

It is particularly in connection with commerce that a wide field is offered for collective, productive and practical work in regard to means of transportation of very kind, especially railways. Without seeking to interfere in the autonomy of any administration, we can still perceive the desirability of a central organisation which would receive schemes for new construction, applications for, and offers of, capital, fixed material and rolling-stock, coal and various raw materials which are necessary for operating railways. While respecting the entire liberty of the various administrations to conclude engagements with each other, one must recognise the advantages which might derive from an organisation of this nature, as a means for economizing time and expense and facilitating the supply of materials.

It may be useful, at this point, to instance a few cases which have occurred in actual practice. A great railway system was suffering from a serious shortage of sleepers during the war. At heavy expense it organised a mission to Brazil, where sleepers were obtainable from the forests ; but the quantity of sleepers required was not commensurate with the cost of laying a railway to the sea. In such a case a central office could have

arranged for several railway administrations to participate in this undertaking and for the cost to be divided among them. Another case occurs to me : A company required a large number of beech-wood panels for railway carriages and was also greatly in arrears with the repair work on its locomotives. Protracted enquiries and several voyages to Europe had to be undertaken before the work could be completed. Had there been a central office dealing with questions of supply and demand, a single letter would have sufficed.

It is even worth considering whether such an institution might not be capable of arranging for the mutual borrowing and utilisation of trucks by various railway administrations. At present each administration is compelled to maintain a reserve of trucks for periods of intensive activity for the harvest or for traffic with the ports. When, however, the period of increased activity is not the same in two or more countries, it should be possible for one administration to borrow from others any stock which is available at the time. This idea is merely put forward for consideration, not as a definite proposal.

The birth of the League of Nations has led to the foundation of a new public institution of a world-wide character. One should, therefore, look forward, in the common interests of all countries of the globe, to a period in which an organisation embracing the different countries may effectively and successfully complete the work begun by the international services. The benefits of this organisation, which should, in different degrees, extend to railways, navigable waterways, etc., will be still more clearly recognized when maritime transport is made the subject of an international agreement with a view to increasing the facilities for trade and intercourse among nations.

* * *

The terrible calamity which has overtaken mankind has given birth to the hope that a strong sense of unity and a desire for co-operation, in the idealistic and the economic spheres, might soon be awakened among all nations.

The great historian who so ably and sympathetically presides over our labours may, with his profound insight into the minds of men and nations, one day explain to us why the hopes which were formed during the war of the growth of a spirit of co-operation and a sense of kinship among nations in the period after the war, have been so slowly and so painfully realised.

Fortunately all nations appear to feel the urgent need for closer relations in the economic sphere. A striking proof of this fact is furnished by the success of the work of this Conference, which, to use the happy expression of our distinguished colleague M. Adatci, recalls the work of the Congress of Vienna ¹.

¹ See the *Verbatim Records and Texts relating to the Convention on the Regime of Navigable Waterways of International Concern*, p. 3 et seq. (Conference of Barcelona, League of Nations).

It is, indeed, impossible to ignore the fact that economic relations, by leading to continuous personal intercourse between individuals, are the determining factor in uniting and reconciling men in the world of ideas. For this reason we cannot fail to welcome with the greatest satisfaction the movement towards economic co-operation between States which has been promoted by the League of Nations. We desire to encourage the League to continue on this path, and to express our earnest hope—nay, more, our joyous conviction—that, day by day, it will become a more potent instrument for achieving unity, economic progress, and general well-being on behalf of suffering humanity.

April 19th, 1921.

CONTENTS

OF VOLUME II

	PAGE
Germany	I
Great Britain	31
Greece	89
Guatemala.	103
Haiti	109
Hungary	115
India	151
Italy	157
Japan	175
Latvia.	199
Lithuania	227
Luxemburg	239
Netherlands and the Dutch Indies	243
Norway	287
Panama	307
Paraguay	311
Persia	313
Poland.	331
Portugal and the Portuguese Colonies	339
Roumania.	351
Serb-Croat-Slovene State	391
Spain	423
Sweden.	431
Switzerland	443
Appendix	455

CONTENTS

OF VOLUME II

1	THE HISTORY OF THE
2	THE HISTORY OF THE
3	THE HISTORY OF THE
4	THE HISTORY OF THE
5	THE HISTORY OF THE
6	THE HISTORY OF THE
7	THE HISTORY OF THE
8	THE HISTORY OF THE
9	THE HISTORY OF THE
10	THE HISTORY OF THE
11	THE HISTORY OF THE
12	THE HISTORY OF THE
13	THE HISTORY OF THE
14	THE HISTORY OF THE
15	THE HISTORY OF THE
16	THE HISTORY OF THE
17	THE HISTORY OF THE
18	THE HISTORY OF THE
19	THE HISTORY OF THE
20	THE HISTORY OF THE
21	THE HISTORY OF THE
22	THE HISTORY OF THE
23	THE HISTORY OF THE
24	THE HISTORY OF THE
25	THE HISTORY OF THE
26	THE HISTORY OF THE
27	THE HISTORY OF THE
28	THE HISTORY OF THE
29	THE HISTORY OF THE
30	THE HISTORY OF THE
31	THE HISTORY OF THE
32	THE HISTORY OF THE
33	THE HISTORY OF THE
34	THE HISTORY OF THE
35	THE HISTORY OF THE
36	THE HISTORY OF THE
37	THE HISTORY OF THE
38	THE HISTORY OF THE
39	THE HISTORY OF THE
40	THE HISTORY OF THE
41	THE HISTORY OF THE
42	THE HISTORY OF THE
43	THE HISTORY OF THE
44	THE HISTORY OF THE
45	THE HISTORY OF THE
46	THE HISTORY OF THE
47	THE HISTORY OF THE
48	THE HISTORY OF THE
49	THE HISTORY OF THE
50	THE HISTORY OF THE
51	THE HISTORY OF THE
52	THE HISTORY OF THE
53	THE HISTORY OF THE
54	THE HISTORY OF THE
55	THE HISTORY OF THE
56	THE HISTORY OF THE
57	THE HISTORY OF THE
58	THE HISTORY OF THE
59	THE HISTORY OF THE
60	THE HISTORY OF THE
61	THE HISTORY OF THE
62	THE HISTORY OF THE
63	THE HISTORY OF THE
64	THE HISTORY OF THE
65	THE HISTORY OF THE
66	THE HISTORY OF THE
67	THE HISTORY OF THE
68	THE HISTORY OF THE
69	THE HISTORY OF THE
70	THE HISTORY OF THE
71	THE HISTORY OF THE
72	THE HISTORY OF THE
73	THE HISTORY OF THE
74	THE HISTORY OF THE
75	THE HISTORY OF THE
76	THE HISTORY OF THE
77	THE HISTORY OF THE
78	THE HISTORY OF THE
79	THE HISTORY OF THE
80	THE HISTORY OF THE
81	THE HISTORY OF THE
82	THE HISTORY OF THE
83	THE HISTORY OF THE
84	THE HISTORY OF THE
85	THE HISTORY OF THE
86	THE HISTORY OF THE
87	THE HISTORY OF THE
88	THE HISTORY OF THE
89	THE HISTORY OF THE
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91	THE HISTORY OF THE
92	THE HISTORY OF THE
93	THE HISTORY OF THE
94	THE HISTORY OF THE
95	THE HISTORY OF THE
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97	THE HISTORY OF THE
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